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ON

DISORDERS OF DIGESTION

ON

DISORDERS OF DIGESTION

THEIR

CONSEQUENCES AND TREATMENT

BY

T. LAUDER BRUNTON, M.D., D.Sc., F.R.S.

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TO

ARTHUR GAMGEE, M.D., F.R.S.

This Book is Dedicated

IN ADMIRATION OF HIS SCIENTIFIC ABILITY AND CLINICAL SKILL,

AND

IN GRATEFUL REMEMBRANCE OF THE LESSONS

IN EXPERIMENTAL PHARMACOLOGY AND PHYSIOLOGICAL CHEMISTRY

FIRST RECEIVED AT HIS HANDS, AS WELL AS OF MANY KINDNESSES

DURING A FRIENDSHIP OF TWENTY YEARS,

BY HIS ATTACHED FRIEND

THE AUTHOR.

PREFACE.

When I was requested by the Medical Society to publish the Lettsomian Lectures which I had the honour to deliver before it, I intended to print them alone. But on looking over them I found that in many places I had referred for fuller particulars to papers which I had formerly published, and it occurred to me that some who might wish to consult these papers would be unable to obtain them, and others might like to be spared the trouble of hunting them up. I therefore decided to reprint some of them along with the Lettsomian Lectures. These papers were chiefly read at different times and before different audiences, and contain the same ideas repeated again and again, sometimes in nearly the same words, almost *ad nauseam*. Indeed, if any one should attempt to read this book straight through he will probably throw it aside in utter disgust. But if he will only take the book up now and then at a spare moment, and read a single paper at a time, he may perhaps excuse the repetition, as it makes each paper more complete in itself. Moreover, the reason why certain ideas are repeated again and again is, that they seem to me very important, and I have decided to let the papers remain as they were originally published, without attempting to lessen the repetition, because I hope that the constant recurrence of certain ideas may obtain for them in the mind of the reader the same importance which they have in that of the writer.

The order followed in the arrangement of the papers which follow the Lettsomian Lectures correspond generally to the course taken by food in the body from the mouth to the stomach and intestine, thence into the circulation and tissues, and finally to the excreting organs.

The Lettsomian Lectures were written after all the other papers with one exception, viz. "On poisons formed from food," etc.; they may therefore be considered fairly to represent our present knowledge of the subject of digestion, while the other papers represent our knowledge of a few years back. The ideas which are fully developed in the Lettsomian Lectures are in some cases at least to be found only in their germs in the earlier papers; especially is this the case with the idea of the poisonous action upon the organism of substances formed in the intestine or in the tissues themselves. It may be interesting to some readers to follow the development of these ideas, and therefore a chronological list of the papers has been added to the table of contents.

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LETTSOMIAN LECTURES

ON

DISORDERS OF DIGESTION: THEIR CONSEQUENCES AND TREATMENT.

LECTURE I.

Delivered before the Medical Society of London, January 5th, 1885.

Mr. President and Gentlemen,—I thank you most sincerely for the honour you have done me in appointing me to deliver the Lettsomian Lectures before you this year. The subject I have chosen is one of much practical interest, but it is of such extent that, to deal with it completely, in a course of three lectures, is obviously impossible. I have already discussed the physiological processes of digestion at considerable length elsewhere,[1] and I have therefore less hesitation in passing over those which are well known, with a few general remarks, and dwelling at greater length upon some points which are not so fully described in text-books, although they have important bearings on the practice of medicine.

Man has been defined as a cooking animal. This definition may not be absolutely correct, and there may be some of the lowest races unacquainted with methods of cooking, although other characteristics entitle them to be called men. Yet the definition is, in the main, true, and the fact that man cooks his food, while the lower animals eat theirs raw, is one of the most marked distinctions between him and them. The practice of cooking was familiar to man at a very early stage, indeed, of his history. Long, long before the historic epoch, when man's only implements consisted of broken flints, he cooked his food by roasting, and the charred remains of bones, which he had roasted in order to enjoy the savoury marrow, have been found in caves, along with fragments of the skeletons of the cave-bear, woolly rhinoceros, and other animals long ago extinct.

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[1] Digestion and Secretion, forming Part III. of Sanderson's *Handbook for the Physiological Laboratory,* 1873. London: Churchill. With the assistance of Dr. D'Arcy Power I have revised it for the French translation by Professor Moquin Tandon, 1884. Paris: Felix Alcan.

There is little doubt that roasting was the first method of cooking adopted, for no implements were required, beyond a piece of pointed stick, to hold the food in front of the fire. Boiling is a considerably more complex process, and requires a vessel in which to hold water. This vessel need not necessarily stand fire, because the simplest method of boiling, and the one which was probably first adopted, appears to be that of heating the water by putting red-hot stones into it, until the temperature is sufficiently raised. But after man learned to make pottery, and to bake it in the fire, so that heat could be applied from the outside without the vessel cracking, the simpler plan of boiling the water by putting the earthen pot upon the fire, would be sure to be followed; for man, as a rule, likes to save himself trouble, and usually takes what seems to him to be the easiest plan.

Amongst the various pots of earthenware, early man must have noted the same differences that we do now. We see some pots of thoroughly baked earthenware so hard and strong as to resemble stone; and, indeed, in the case of a Wedgwood mortar, the earthenware is more resistant than almost any stone. Other pots we see of fine china, thin and fragile, which must be handled with the greatest care, lest they break under our fingers. Yet both vessels are equally whole. Turn them round and round, and scan them most minutely, and yet you will find no flaw in either the one or the other. There is no difference between their wholeness, or wholth, or, as we now write it, health; yet the wholeness or health of one vessel is strong, and the wholeness or health of the other is weak. The one may be put to all sorts of purposes, subjected to all sorts of treatment, meet with all sorts of rough usage, and yet it will remain whole or healthy. The other remains whole only so long as it is treated with the greatest care; the slightest rough usage will crack or break it, and then its wholeness or health is gone.

Our early forefathers, when framing a language by which to communicate with one another, had evidently been struck by an analogy between the implements they used in cookery, hunting, or warfare—those implements by which they maintained the life of their bodies—and those bodies themselves; for they applied the word health to signify soundness in both. At the present day, we sometimes forget the derivation of our word health; but still we are accustomed to qualify it by the adjectives strong and weak, in much the same way as one might speak of the soundness of an earthenware pot.

By strong health, we mean a soundness of body which, like that of a Wedgwood mortar, will enable a person possessing it to go through all sorts of work, be subjected to all sorts of usage, and yet remain sound or healthy. By weak health, we mean a condition of body wherein all the functions go on perfectly so long as external circumstances are favourable, in which the person is fitted to do certain work, and will do it perfectly, provided the calls made upon him be not too great for his strength; but, if he be subjected to any extraordinary exertion, any unusual exposure, or rough usage of any kind, the feeble organism at once breaks down, and is damaged or destroyed.

Not unfrequently we find that a strong earthenware pot, subjected to very rough usage, is cracked; but the crack, instead of completely destroying it, reduces it only from a condition of strength to weakness; so that it remains to a certain extent whole, but is now weak; and unless treated with care, it will readily break, although, if tenderly handled, it may continue useful for a long time. We find a similar condition also in man; and what was originally strong health in a person may be so weakened by exposure, overwork, or the consequences of acute disease, that the health becomes permanently weak, instead of strong.

Health in man, as in other animals, depends upon the proper performance of all the functions. These functions may be shortly said to be three: (1) tissue-change, (2) removal of waste, (3) supply of new material. For the activity of man, like the heat of the fire by which he cooks his food, is maintained by combustion; and just as the fire may be prevented from burning brightly by improper disposition of the fuel, or imperfect supply of air, and as it will certainly go out if fresh fuel be not supplied, and may be choked by its own ashes, so man's activity may be lessened by imperfect tissue-change, and may be put an end to by an insufficient supply of new material and imperfect removal of waste products.

It is with the supply of new material that we have to concern ourselves chiefly in the present lectures, although it is so closely associated with tissue-change and removal of waste, that we shall be obliged to consider these also to a certain extent. The old proverb, "There is many a slip 'twixt the cup and the lip," shows how clearly our forefathers recognised that neither food nor drink was available for the wants of the body until it had actually been taken. Our knowledge carries us a step further than theirs; but even yet we are very apt to forget that both food and drink are useless for the wants of the organism, so long as they are simply in the intestinal canal.

The body may be roughly compared to a cylindrical box, through the centre of which runs a tube, open at both ends, but not communicating with the cavity of the box. Here, it is evident, that anything put into the tube, remains as much outside the box as if it were laid against the outer surface. If the tube be of a different material from the outer wall of the box—if, for example, it be more pervious, liquids or finely-divided powders may pass more readily into the box through the wall of the tube than they would through the outer wall of the box itself; but so long as they do not pass through in this way, they will remain, to all intents and purposes, outside the box; and this is the case with the intestinal tube.

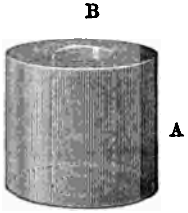

Fig. 1.—Diagrammatic representation of the body. A the box. B the inner tube.

Food and drink, when swallowed, are still outside the body, and in certain circumstances remain so just as much as if they had been laid against the skin. For we sometimes find that food which has been swallowed passes through the intestine, and is evacuated, almost, or entirely, unchanged. It has simply fallen, so to speak, from the mouth to the anus, much as it might have fallen from the neck to the feet, if it had been laid against the skin.

There is, no doubt, one great difference between the skin and the intestine, viz., that the nerves of the intestinal tract are more sensitive than those of the skin, and in passing over the mucous membrane the substance may have exercised a greater action on the body, reflexly through the nerves, than it would have done in passing over the skin, but otherwise the condition in the two cases is much the same.

Another difference is that the epidermis which covers the skin is much harder and less permeable than the epithelial covering of the mucous membrane lining the alimentary tract; and, therefore, liquids applied to the skin remain unabsorbed, while usually they pass pretty readily into the body from the alimentary canal.

Solids in a very minute state of division, and especially when mixed with fat, may be absorbed by the skin, as we see in the case of inunction with mercurial ointment, where the minutely-divided globules of mercury pass through the skin, are absorbed into the circulation, and are carried by the blood to the various parts of the body. It is most probable, although authorities are not completely agreed upon the subject, that solid particles in a minute state of subdivision are also absorbed by the mucous membrane of the alimentary canal, but the greatest part of the food is absorbed, not in a state of simple minute subdivision, but in a state of solution.

In the alimentary tract, we have provision made both for solution and for absorption, and those two processes are included under the term digestion.

Digestion, like the health generally, may be strong or weak. Some persons are able to take with impunity quantities of fat, pastry, cheese, raw apples, and various kinds of indigestible food, which in other persons would cause discomfort, pain, vomiting, or diarrhœa. Some are able to take meals at all sorts of irregular hours; to do hard work for a whole day without food, and then consume an enormous dinner; to go through all sorts of anxiety without the least diminution of appetite; and to drink all sorts of strong liquors without appearing to be any the worse. Their digestion is both healthy and strong.

Others, again, suffer if their meals are not served exactly at the usual times; a little extra work or a little anxiety will either destroy their appetite or impair their digestive power; a meal somewhat too hearty, or the slightest indulgence in wine or alcohol, is sure to be followed by unpleasant consequences. Yet even those persons may go on for months and years with comfort, digesting their food perfectly, provided only that they take care to fulfil the necessary conditions. Their digestion is healthy, but it is weak.

When digestion is imperfectly performed, we say that the patient suffers from indigestion. Indigestion may occur in those who habitually have either a strong or weak digestion, and by proper methods it may frequently be cured in both; nay, more, we may sometimes be able to strengthen the naturally weak digestion, though we can hardly expect to alter the natural constitution of the patient, so far as to enable a man who has naturally what is called "a weak stomach" to compete with one who has naturally got the digestion of an ostrich, at a civic feast or at a succession of private dinners.

We have already compared the food by which man's activity is sustained to the fuel which keeps up a fire, but this comparison is not altogether correct. For man is a complex machine, and not only must energy be supplied to the whole body in order to maintain its activity, but the different parts of his body are composed of different materials, and the wear and tear of each must be replaced by its appropriate constituents. A steam-engine not only needs fuel to keep it going, but metal is required to replace the wear and tear of its parts, and oil to lessen the friction of the various parts upon one another. No doubt some of those various necessaries may be replaced by others, and we might, for example, use oil instead of fuel; but this would be a wasteful and expensive proceeding.

Similarly, a mixture of foods is best adapted to supply the energy and repair the waste in the human body. Like the steam-engine, we require oils or fats; proteids, which go, in a great measure at least, to repair the wear and tear of the tissues; and carbo-hydrates, which may be looked upon as, like coal, supplying energy to the organism by their combustion. These various kinds of food are required in different proportions. According to Ranke, about 100 grammes of proteids and a similar quantity of fats are required daily by a man, while two and a half times as much, that is, 250 grammes, of carbo-hydrates are necessary.

Very few substances indeed will supply the requisite ingredients in proper proportion for the wants of the body, and so we usually employ a mixed diet. Black bread is one of the few which contains very nearly the proper proportion of nitrogenous and carbonaceous materials, and, when taken along with a little oil or a few olives, it may maintain a man in health and activity, without the addition of almost anything else except that of a little salt, as is seen amongst the hard-working peasantry in the south of France.

In this country we have generally a more varied diet, and, as a typical meal, we may take a beefsteak with a bit of fat attached, a piece of bread, some salt, and water. The beefsteak supplies fat and proteids, the bread supplies carbo-hydrates, and the salt and water make up the requisite constituents of food.

But the beefsteak and bread cannot be absorbed in their solid condition, and unless they are absorbed, as I mentioned before, they are of no use to the body. Nor is it sufficient merely to reduce them to a minute state of subdivision, they must be dissolved. The salt which we eat with the beefsteak dissolves in the water without more ado; but the beefsteak itself and the bread will not dissolve without first undergoing some change.

In all processes of solution, the first thing to be done is, if possible, to get the substance which is to be dissolved into a state of minute subdivision.

If we take coarse salt in large crystals it dissolves slowly as compared with table-salt in fine powder, and we accelerate its solution very much by breaking it up, and by stirring it through the water. If we allow it to remain at rest, the layer of water in contact with it soon becomes saturated, and the process of solution goes on slowly, whereas, by stirring, we bring the particles of salt constantly into contact with unsaturated water, and thus solution goes on quickly. In the process of solution, the particles of salt become separated from each other by the water, but the process is a physical one; each particle still continues to be salt, and if the water be removed by evaporation, the residue is salt just as it was at first.

During digestion, a similar process occurs in the case of proteids and carbo-hydrates, but it is carried a step farther. Not only do the particles of proteids and carbo-hydrates become separated from one another by the water, but it penetrates into the chemical molecules of which they are composed, so that a chemical change of hydration occurs, and the large chemical molecules of the proteids and carbo-hydrates split asunder into smaller and simpler ones.

In breaking down the beefsteak or the bread mechanically, we see that we are able to make the particles of which they consist smaller and smaller, until, perhaps, we may be barely able to see each particle with the naked eye. But the process of subdivision does not stop at the limits of our vision, nor even at the limits of our highest microscopic powers. In a perfect solution, the most powerful microscope will fail to discover any particle, and yet we are able by certain methods not only to show the presence of particles, but even to judge of their size.

We estimate the size of particles that we can see, by the size of the mesh in the sieve through which they will pass, and, by a similar method, we are able to judge of the size of the molecules of chemical substances.

Graham showed that some bodies will diffuse through an animal membrane, others will not. Those that diffuse are generally crystalline, those that do not diffuse are generally non-crystalline; but it is probable that the connection between crystallisation and diffusion is to be regarded as accidental rather than necessary, and the real cause why some substances diffuse and others do not, is that the molecules composing them differ much in size.

In experiments on diffusion through artificial membranes, Moritz Traube found that a membrane of tannate of gelatine would allow nitrate of barium with a molecular weight of 130.6 to diffuse through it, and would also allow the passage of all compounds having a smaller molecular weight, but it stopped the passage of ferrocyanide of potassium, having a molecular weight of 211.4.[1]

Membranes may thus be regarded as atomic sieves; and if one substance will not diffuse through a membrane which will allow another to pass, we may consider that the molecules composing the substance which diffuses are smaller than those of the other. This view has an important bearing, as we shall afterwards see, on the causation of certain forms of albuminuria. It is supported, not only by the experiments of Traube on artificial membranes, but by the behaviour of hæmoglobin in regard to diffusion.

Crystalline bodies are, as a rule, diffusable, but they are usually also of much lower molecular weight than organic uncrystalline bodies. There is one crystalline substance—hæmoglobin—which will not diffuse, but it has a very high molecular weight, and probably the chemical molecules of which it consists are very large.

In the process of hydration, the molecules of albumin and of starch do not split down all at once into the smallest molecules to which they may be ultimately reduced by the action of digestion. Between the large molecules, forming the myosin and starch of the beefsteak and bread, and the small ones of peptone and maltose into which they are transformed during digestion, there are a number of intermediate products. In these products, the molecules are probably of varying size, and they diffuse with various degrees of rapidity.

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[1] Moritz Traube, *Centralblatt für die med. Wiss.*, 1866, p. 114.

Thus the large molecule of starch breaks down, first into dextrine, and then into sugar. The large molecules of albuminous materials or proteids (including in this term ordinary albumen or white of egg, cooked meat, the casein of milk or cheese, and the vegetable casein of wheat or peas) break down into intermediate substances termed antialbumose, hemialbumose, antipeptone, and hemipeptone, before they are finally converted into peptones. There is less necessity for the molecules of fats to be broken down chemically, because, as we have seen, fats are absorbed even by the skin, and they seem to pass through the mucous membrane of the intestines, and become absorbed, even without decomposition. Their absorption is, however, aided by their being reduced to a fine state of subdivision or emulsion, and this minute subdivision occurs all the more readily by a partial decomposition into fatty acid and glycerine occurring in the digestive canal. The presence of a slight trace of fatty acid greatly aids the formation of an emulsion; and, as we shall presently find, decomposition of fats, with liberation of fatty acid, does occur in the process of digestion.

It may be worth while now to take a short survey of the digestive processes, although time will not allow us to enter at all fully into them.

These processes used formerly to be subdivided into (*a*) those of primary and (*b*) those of secondary digestion. Those of primary digestion are farther subdivided into—

1. Mastication.
2. Insalivation.
3. Deglutition.
4. Gastric Digestion.
5. Intestinal Digestion.
6. Absorption.

Those of secondary digestion may be subdivided into the changes undergone by the products of primary digestion, in—

1. The portal blood.
2. The liver.
3. The lymphatic glands.
4. The general circulation.
5. The tissues.

The first part of the digestive process in man is a very important one, and one which does not receive anything like the amount of attention which it ought; it is the process of mastication. As I have already mentioned, whenever we wish to dissolve anything rapidly, we must comminute it finely. All the food should, therefore, be thoroughly broken up in the mouth. Thorough mastication not only subdivides the food mechanically, but the saliva which is secreted under the two-fold stimulus of the taste of the food and the movements of mastication tends to dissolve such parts of the food as are soluble in water, and to convert the insoluble parts into a pulp. At the same time, the diastatic ferment of human saliva begins to convert the starch of the food first into dextrin, and then into malt-sugar, or maltose. This conversion goes on very rapidly; and if one chews a piece of stale bread, even for a couple of minutes, a distinctly sweet taste will usually be perceived from the formation of sugar in the mouth.

But the effects of mastication are not limited to the changes produced by it in the food within the buccal cavity; the taste of savoury meat, the rolling of a sweet morsel under the tongue, and the movements of mastication, exert an influence both on the stomach and on the brain.

The effects on the stomach are shown by the observation of Richet, that, in a case of gastric fistula, where the œsophagus was completely occluded, mastication of food induced secretion of gastric juice, although nothing could pass from the mouth into the stomach on account of the obstruction in the gullet.

The effects of mastication on the nerve-centres are perhaps still more important. For it is obvious that the secretion, both of saliva and gastric juice, takes place reflexly through the medium of the nerves; and if the nervous system be dull or depressed, the stimulus of food in the mouth is not likely to excite secretion to the same extent as when the nerve-centres are active.

But provision seems to have been made for this; and the mere act of mastication not only supplies a stimulus to the peripheral ends of sensory nerves in the mouth, it leads to an increased supply of blood to the nerve-centres. This is well shown by some observations of Marey, who found that the current of blood in the carotid artery of a horse became three times as rapid during mastication as it was before. No doubt, part of this increased supply of blood went to the salivary glands and to the muscles of mastication; but it is almost certain that a part of it went also to the nerve-centres. Even if one should deny that any part of the extra current of blood in the carotid, which is consequent upon mastication, goes to the brain, the fact

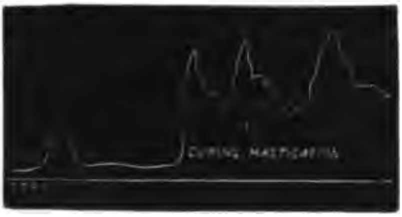

Fig. 2.—Tracing to show the increased rapidity of circulation in the carotid artery of a horse during mastication.

would still remain that the movements of rolling the morsels about in the mouth, and sucking their sweetness and savour, increases the circulation in the brain, for Salathé[1] has actually observed the fontanelles rise in a child during suction.

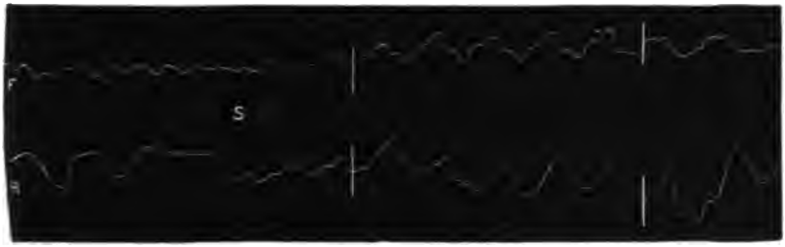

Fig. 3.—Pulsations of the fontanelle (F) in an infant six weeks old while sucking. R shows a simultaneous tracing of the thoracic respiration. The breast was offered to the child at the beginning of the tracing. At the time indicated by the third respiratory wave, which has a flattened top, the child began to take the breast. It will be noticed that the line of the tracing F rises, indicating increased circulation on the brain.

When the food has been thoroughly masticated, it is swallowed, and the act of swallowing sets in action a mechanism which is calculated to increase the blood-supply, not only to the nerve-centres, but to all the glandular structures concerned in the digestive tract. Kronecker has discovered that the act of swallowing seems to remove entirely the inhibitory action of the vagus upon the heart, for the time being, so that the pulse becomes exceedingly rapid. The extent to which this occurs will hardly be credited by any one who has not tried the experiment. In my own case, I find that sipping half a wine-glass full of water will raise my pulse from 76 to considerably over 100. So that, in fact, a glass of cold water, slowly sipped, will stimulate the heart as much, or more, as a glass of brandy swallowed at a draught.

The stimulant effect of sucking is soon learned by children, and we see them console themselves, and raise their spirits, by sucking their thumb when they are depressed by being chidden, or by any childish misfortune; in fact under conditions similar to those under which children of an older growth might keep their spirits up by pouring spirits down. A part of the stimulant effect of sucking is probably due to its action on the heart as well as to a stimulant action upon the cerebral circulation.

When the food arrives in the stomach, it will, if mastication has been properly performed, and the digestive fluids have been properly secreted, find a supply of gastric juice already in the stomach, and this will continue to increase in quantity during the progress of the meal. The alkaline saliva swallowed with the food will act as a further stimulus to the secretion of the acid gastric juice, but soon the quantity of acid will be sufficient not only to neutralise the alkali, but to leave a little acid over. The amount of free acidity is, however, very slight, because the hydrochloric acid which the gastric juice contains, combines, for the time being, with pepsin and proteids, forming a compound which does not give an acid reaction.

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[1] Marey's Travaux for 1876, p. 354.

The starch which has begun to be converted into dextrin in the mouth, undergoes still further conversion by the saliva which has been swallowed. It has not yet been definitely settled whether or not the action of the saliva is so far arrested in the stomach as to prevent the formation of more sugar, but, at all events, it appears to be certain that dextrin is formed, and this is a fact of very considerable importance, as we shall see when we come to consider the order in which food is usually taken at meals.

Albuminoids, or proteids, under the action of the gastric juice, swell up, and are more or less completely dissolved. The large and complicated molecules which compose them appear, as already mentioned, to be broken up into simple ones by a process of hydration. First of all, they appear to form a compound with acid, termed syntonin, or acid albumen. This is soluble in acid, but when the solution is neutralised the albuminoid is again precipitated. The next stage appears to be the formation of a body known as pro-peptone, hemi-albuminose, or parapeptone. This body is not coagulated by heat, and is soluble in water in the presence of weak acids or alkalies. It is precipitated by nitric acid, but when the mixture is heated it dissolves, and a precipitate forms again on cooling. This reaction is important, because it is used to detect hemi-albuminose when this substance appears in the urine, as it sometimes does.

The last stage is the formation of true peptones, which are not coagulated by boiling, nor by nitric acid, nor by acetic acid and potassium-ferrocyanide. They diffuse very easily through animal membranes, and in this respect they differ very greatly from other forms of albumen. By dissolving albuminous substances in artificial gastric juice outside the body, we can produce peptones, and these are sometimes of great service as nutrients in disease. We almost always notice that the product of such artificial digestion has a disagreeable bitter taste. The cause of this bitterness has not yet been thoroughly investigated. We know, however, that amongst the strongest bitters with which we are acquainted are some of the organic alkaloids; for example, strychnine, the bitterness of which can be perceived in extremely dilute solutions. Now, the organic alkaloids are, to a certain extent, related to albumen, inasmuch as they both belong to the aromatic series of organic compounds, and several alkaloids have been obtained from decomposing albumen. To these alkaloids the name of ptomaïnes has been given. This relationship between alkaloids and albuminous substances would almost lead us to suspect that the bitterness developed during gastric digestion might be due to the formation of an alkaloid. As I have already said, it is not certain that this bitter substance is an alkaloid, but it is certain that an alkaloid has been obtained by Brieger from peptones formed by gastric digestion. By extracting a quantity of gastric peptones with amylic alcohol, he obtained an alkaloid free from peptones which had an action like that of curara. To this alkaloid he has given the name of peptotoxine.

Every effect has got a cause, if we can only find it out; but we not unfrequently ascribe effects to the wrong causes, and perhaps this may be the case with regard to the activity of the pylorus. While the food remains in the stomach, it is mixed up thoroughly with the gastric juice by a sort of churning movement of the gastric walls of the stomach, the pylorus remaining contracted, so as to prevent the gastric contents from escaping in any large quantity into the duodenum.

At the end of three or four hours, however, the pylorus relaxes, and the chyme escapes out of the stomach into the duodenum. This alteration in the behaviour of the pylorus, at the end of a certain time, has been ascribed to the increasing acidity of the chyme; but this seems a little doubtful, inasmuch as we frequently notice cases of abnormal acidity, where the food is retained in the stomach for an excessive time, instead of being passed on too rapidly to the intestines. This is a point upon which we are at present quite unable to speak with any certainty; but the discovery that an alkaloid is formed during the process of digestion in the stomach opens up a new field of inquiry, and may lead us to ask whether the different behaviour of the stomach, at the end of three or four hours, is not partly due to the action of this alkaloid upon it, though no doubt the simplest explanation is, that it is merely a rhythmical function like sleep or waking.

During the process of digestion in the stomach, fats become partially decomposed, and a small quantity of fatty acids are formed, which aid in emulsifying the remainder of the fat.

When the chyme passes through the pyloric orifice into the duodenum, it meets with the bile and the pancreatic juice. These neutralise the acid chyme, and render it alkaline. The further action of pepsin is thus prevented, and the albuminous substances, which have only been converted into syntonin, or acid albumen, are precipitated. The pancreatic secretion is the most energetic and general in its action of all the digestive juices: it unites in itself the action of the saliva and the gastric juices, besides having properties of its own. Like the saliva, it converts starch into dextrin and sugar, and it finishes the work which the saliva had begun.

Like the gastric juice, it dissolves albuminous bodies, forming peptones, though it does not dissolve them in quite the same way. The gastric juice causes them to swell up before they dissolve. The pancreatic juice attacks them from the outside, and makes them crumble away. We do not yet know whether there is any distinct difference between the peptones formed by the action of the pancreatic and gastric juices, but it seems not at all improbable that differences should exist.

In addition to its action on starch and albuminoids, the pancreatic juice emulsifies fats, and tends to split them up into fatty acids and glycerine.

This emulsifying action is aided by the bile, which appears to have a considerable power to facilitate the passage of fat through animal membranes. This can be readily shown by trying to make oil pass through an animal membrane wetted with water, and another similar one wetted with bile. The oil will pass through the latter much more readily than the former. The action of bile in dissolving fats is indeed popularly known, and it is used for removing oil-stains from articles of furniture. In an examination on physiology some years ago at South Kensington, the question was put, "Where is bile formed, and what are its uses?" One candidate's answer was, "Bile is formed in the stomach, and is used for cleaning carpets." The knowledge of physiology displayed by this student was somewhat inaccurate, to say the least of it; but his answer may serve to impress upon our memories the fact that bile has the power not only of removing stains of grease from the surface of vegetable fabrics like carpets, but of enabling oil to pass through animal tissues, such as mucous membranes.

But the bile has another very important function: it tends to prevent putrefaction. Now the minute vegetable organisms which give rise to putrefaction are to be found almost everywhere; and they pass into the intestine with our food and drink. The healthy stomach, with its acid secretions, does not afford them a suitable nidus, but the products of pancreatic digestion seem to form a soil especially favourable to their development. If we digest a piece of meat with pancreas for twenty-four hours at the temperature of the body, we usually find that not only has the meat become dissolved, and peptones formed, but that the peptones themselves have undergone a further decomposition, and that leucin, tyrosin, naphthilamine, and a substance termed indol, nearly allied to indigo, but with an abominable smell, have been formed. Indol is not a product of the decomposition of nitrogenous matter by the pancreatic ferment; it is due to decomposition caused by the presence of putrefactive bacteria.

The same changes which occur in pancreatic digestion outside the body may, and sometimes do, occur inside the body. In health, their occurrence is probably rather the exception than the rule; but, were it not for the antiseptic action of the bile, their occurrence would probably be the rule, and not the exception. It may seem, perhaps, to some persons that the occurrence of putrefaction is of no great consequence; but when we remember that during putrefaction, organic alkaloids which have a poisonous action are formed in the body, it is evident that, if putrefaction takes place to any great extent in the intestine, there may be a risk of actual poisoning by the absorption of organic alkaloids formed in the intestinal canal.

From the duodenum onwards to the rectum, the reaction of the intestinal contents remains alkaline, and so there is nothing to arrest the further action of the pancreatic ferments. The action of the intestinal juice on the food is not as yet perfectly understood, and various conflicting statements have been made regarding it. One reason of this conflict probably is, that the action of the intestinal juice has been tested upon the raw constituents of the food, and not upon foods which have already been altered by exposure to the action of the gastric and pancreatic juices. The intestinal juice is said to have no action on coagulated albumen, and this appears to be the case; but when I was working in his laboratory at Amsterdam, Professor Kühne informed me that intestinal juice would dissolve coagulated fibrine, which had been previously rendered soluble, but not peptonised, by pancreatic juice.

As the food passes through the large and small intestine, those portions of it which have been rendered soluble by digestion are gradually absorbed by the veins and lymphatics, and carried into the general circulation.

Almost immediately after entering the blood-vessels, changes appear to occur in the peptones. These appear to be taken up, to a great extent, by the red blood-corpuscles, and converted by dehydration into a larger and more complicated albuminous molecule, namely, that of globulin. The blood-corpuscles thus form, as it were, a store of albuminous material, which they convey to all parts of the body, and give off where it is wanted.[1]

But the whole of the peptones do not appear to undergo this change; part of them appear to be arrested in the liver, and to form glycogen, as it has been found that the quantity of glycogen in this organ is increased by the injection of peptones into the bowel.[2]

The sugar also becomes dehydrated, and glycogen is produced from it likewise. This is stored up in the liver for a variable time, and then gradually given out again to supply the wants of the organism. The liver, therefore, acts as a wise steward, laying by provision for the organism in the times of plenty after a full meal, and giving it out again in times of fasting.

But this is not all. The liver acts not only as a wise steward but as a watchful porter. We know that one of the most striking points in the action of such powerful poisons as the venom of vipers and curara is that, though so deadly when injected into a wound, they are almost completely innocuous when swallowed. We know that one reason of this is, that they reach the general circulation much more slowly from the intestine than from the wound, so that the kidneys have time to excrete them, and prevent their accumulating in the blood. It is the liver which is the chief agent in retarding the absorption of poisons into the blood, and thus rendering them comparatively innocuous when they are introduced into the intestinal canal. All the blood from the stomach and intestines must pass through the portal vein before it can reach the general circulation; and, as our forefathers recognised by the name they gave to the porta or gate of the liver, the hepatic tissue acts the part of a prudent porter at the gate, and turns back or destroys dangerous intruders. Poisons injected into the duodenum are absorbed into the portal vein; but they are removed from the blood by the secreting tissue of the liver, and poured back again with the bile into the intestinal canal. Again, they undergo reabsorption, and round and round they may go in a circle, from intestine to liver, and from liver to intestine again, without ever being able to pass into the general circulation, or produce any direct effect upon heart, lung, brain, or kidneys (p. 41).

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[1] G. Fano. Lo Sperimentale. Settembre e Ottobre, 1882.

[2] Seegen Pflüger's Archiv. xxviii. p. 99.

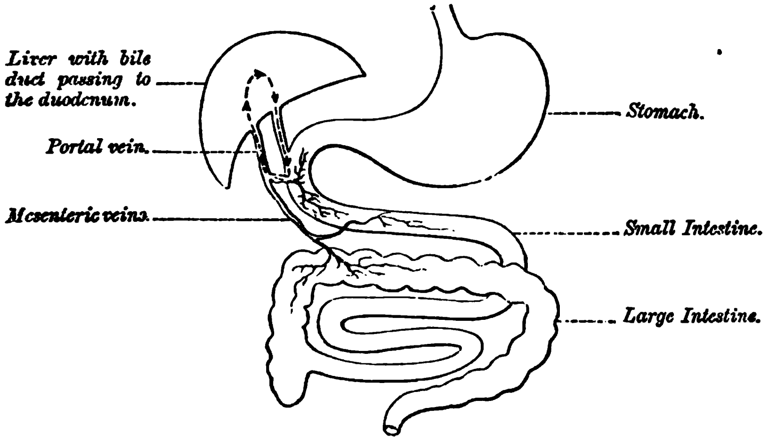

Fig. 4.—Enterohepatic circulation. The broken line --> shows the absorption and re-excretion of bile.

But even this is not all. The liver actually destroys some organic poisons, such as nicotine; and, were it not for the faithful performance of its duty, we would be in danger of poisoning by every meal we take. For Ludwig and Schmidt-Mülheim have found that peptones, when injected into the general circulation, act as poisons, producing loss of coagulability in the blood and great depression of the circulation. We see, then, that the products even of healthy digestion might prove fatal if they passed rapidly into the general circulation; and it is still more likely that such an effect would follow the absorption of the products of the putrefaction which occurs in cases of indigestion. Were it not for this power of the liver to obstruct the passage of poisons, and actually to destroy them, the alkaloids formed either by normal digestion or by abnormal putrefactive process in the intestine might readily pass to the heart, nervous system, and kidneys, and cause dangerous or fatal consequences.

The function of watching over the safety of the organism is not confined, however, to the liver, but is shared by other organs. The liver acts as a porter to prevent injurious substances passing from the intestine into the blood, but the tongue and palate are the porters, which prevent obnoxious substances from being taken into the intestinal canal. As a general rule, though by no means without exception, substances pleasing to the palate are useful and not injurious to the organism.

The nerves of taste, like those of sight and hearing, are nerves of special sense, and are capable of education. But, while we usually regard the education of the senses of sight and hearing as a noble thing, we are too careless of the education of our taste, and look upon it rather as something degrading.

Yet the education of the nerves of taste should be considered in the same light as that of the other special senses; and cookery has, I think, a perfect right to be ranked with music, painting, sculpture, and architecture as one of the fine arts. The difference between cookery and music, or painting, is, that while the objects which give rise to sight and sound remain outside the body, we are obliged to swallow the substances which excite sensations in our nerves of taste. It is not quite sufficient to turn them over in the mouth and put them out again, because the full sensation is only obtained just in the act of swallowing. For this reason devotees to the art of cookery must either be content with a moderate enjoyment of the pleasures of taste, or consent, like some of the Roman emperors of old or German students of the present day, to eject again the food or drink which they have already taken and enjoyed.

Only rarely does one meet with a dinner which gives one the sense of high artistic perfection, although I remember having partaken of one such when enjoying the hospitality of a City company. Each course seemed to excite an appetite for the one which succeeded, and was accompanied by a wine so carefully selected that it gave zest to the food, while the food appeared to give additional flavour to the wine.

This dinner was a revelation to me; it not only showed me that cookery might rank as one of the fine arts, but taught me that it might be a powerful moral agent. I went to the dinner exhausted with overwork, irritable in temper, and believing that City companies were wasteful bodies, who squandered money that might be employed for useful purposes, and that they should be abolished; I came away feeling strong and well, with an angelic temper, and firmly convinced that City companies had been established for the express purpose of giving dinners, and ought on no account to be interfered with. Nor was the good thus effected of a transitory nature; the irritability of temper, which had disappeared in the course of dinner, did not return; and the morning afterwards, instead of awaking with headache and depression, I awoke strong, well, and ready for work, and remained so for a considerable length of time. Nor do I think that mine is a solitary case. A succession of heavy dinners is, no doubt, injurious; but when the organism is exhausted, a good dinner, with abundance of wine, is sometimes of the greatest possible use. But there is one condition which must not be neglected, or otherwise the consequences will be anything but satisfactory: the dinner must be well cooked, and the wines must be thoroughly good.

It is, as I have said, only occasionally that one meets with real high artistic cookery. But, even in the courses of an ordinary dinner, an order is adopted which is thoroughly physiological, and which shows that, whatever men may be in other things, they are not "mostly fools" in regard to the plan of their meals.

The common order of courses in a plain dinner is soup, fish, joint, pudding, bread and cheese, and dessert. The reason why soup comes first has been admirably shown by Schiff in his experiments on digestion. This physiologist found that the stomach of an animal which some time before had digested a full meal, had very little power to digest albumen introduced directly into it; and a similar fact was ascertained in regard to an extract made from the stomach itself, this extract hardly acting on albumen at all. The stomach seemed to be exhausted by the effort of digesting a full meal several hours before, and to be incapable of producing pepsine. But if certain substances were introduced first into the stomach, the power to digest albumen was enormously increased. To these substances Schiff gave the name of "peptogens," and the most powerful of them he found to be dextrin, and soup made from meat.

If the human stomach resembles the stomachs of animals in this point as it does in others, then we may say that usually the power of the stomach to digest such substances as hard-boiled eggs or boiled meat, when these are taken alone, will be very slight. But if the meal be begun with a plate of soup and a piece of bread, the bread which will be partly converted into dextrin in the mouth, and the extractive matters of meat contained in the soup, on reaching the stomach will be absorbed, and will supply to the gastric follicles the power to secrete an abundance of pepsine. In this country, where our butcher's meat is tender and juicy, we not unfrequently find that people in the middle of the day will take a beefsteak or a mutton-chop without soup.

In this case, the savoury soluble substances which the meat contains are quickly extracted from it in the stomach itself, and, being absorbed, supply the necessary secreting power to the gastric glands. But in other countries, where the animals slaughtered for food are often old and tough oxen, which have been employed for years in agricultural service, the meat, being less savoury and juicy, will not yield peptogenic matters so readily to the stomach. Consequently, the Frenchman generally boils his butcher's meat thoroughly, and adds pieces of bread to the soup with which he begins his meal, so that the stomach can absorb sufficient peptogenic substance before the hard and tasteless boiled beef is swallowed.

Next to the soup, as I have said, usually comes fish, which is digested more easily than butcher-meat. I have already mentioned, more than once, that the rapidity with which anything dissolves depends very much on the fineness with which it is divided. Now, this is quite true of the different kinds of meat. Beef is acknowledged to be less digestible than mutton, and mutton less digestible than fish. The breast of a chicken is also reckoned very digestible. If we compare these different kinds of flesh, we will find that in beef the fibres are longer and harder than those of mutton, and those of mutton longer and harder than those of the breast of a fowl. The muscle-fibres in fish are arrayed in flaky masses, and are not only very short, but are very readily separated from one another.

We see, then, that the different digestibility of different kinds of meat corresponds exactly to the readiness with which their muscle-fibres can be broken up mechanically. That it is the physical conformation of the muscle-fibres, rather than anything peculiar to the animal from which they are derived, is shown, I think, by the fact that, although the breast of fowls is universally acknowledged to be readily digestible, the legs, in which the muscular fibres are long and hard, are by no means specially adapted for weak digestions.

With the meat, come vegetables, which are not only useful as supplying inorganic salts, but probably play a considerable part in aiding the recomposition of peptones into the albuminous material of the tissues, after their absorption.

After the meat come the bread, cheese, and dessert. The bread will, no doubt, supply additional dextrin, and the cheese additional albuminoids; but, if we direct our attention only to the stomach, and to the chemical changes which are going on in it, it is not quite easy to see why bread, cheese, and dessert should be taken at the end of dinner. If we turn our attention, however, to the circulation and the nervous system, and remember the effect which I have already mentioned as produced upon them by the mastication and deglutition of savoury food, we can at once see a good reason for the common manner of terminating a dinner. In order to supply abundant gastric juice for the digestion of the food introduced into it, the stomach requires an abundant supply of blood, and the nervous system must be kept active in order to respond to the calls made upon it. The savoury cheese, swallowed in small morsels, and the sweet fruits, which strongly stimulate the nerves of taste, or nuts, which require considerable mastication, cause an abundant flow of blood to the nerve-centres; while the frequent movements of swallowing stimulate the heart, and increase the rapidity of the general circulation.

In the case of ordinary meals taken by a healthy man, the food is quite sufficient to stimulate the various parts of the digestive canal, the nervous system, and the circulation sufficiently to insure complete digestion. But if the meal be more than ordinarily heavy, if the person be exhausted by long fasting, by severe exertion, or have a weak digestion, other aid must be invoked. One of the most powerful stimulants, both to secretion and the circulation, is alcohol; and we find that persons of weak digestion sometimes take sherry and bitters before a meal, or take a glass of sherry with their soup. During the course of a meal, an effervescent wine like champagne is taken, the carbonic acid of which will stimulate absorption, while at the end a powerful stimulus is applied in the shape of a small glass of brandy or liqueur; and during dessert a quantity of wine is sipped, so that the effects already mentioned of the sipping upon the circulation and nervous system are combined with the action of the alcohol and ethers contained in the wine.

Provided that all those parts of a meal have been taken in moderation—and when we speak of moderation, we must always remember that this is a relative term: what is moderation for a man of strong digestion is excess for a man of weak digestion—provided, then, that moderation has been exercised, no harm will result even from a heavy meal. But if the food has been excessive in quantity, or injurious in quality, and more especially if alcoholic stimulants have been taken in excess, the stomach will suffer, and, next day, the symptoms of gastric indigestion will probably appear. The most marked of these are: loaded tongue, loss of appetite, tendency to nausea, and, perhaps, even vomiting. The condition of the stomach, corresponding to these symptoms, was ascertained by Dr. Beaumont in the case of Alexis St. Martin. On looking into the interior of St. Martin's stomach, during the occurrence of such symptoms as these, Dr. Beaumont found "that several red spots and patches abraded of the mucous coat, tender and irritable, appeared over the inner surface." In such congested and irritable conditions of the stomach, the gastric juice secreted appears to have an alkaline, rather than an acid, reaction, and consequently to have comparatively little or no digestive power. The food will, therefore, pass from the stomach, not in the form of a fine emulsion, like chyme, but with undigested lumps in it, and these, irritating the intestine, will be not unlikely to produce diarrhœa; moreover, the intestine itself may also suffer by extension of the inflammatory condition, from the stomach along the mucous membrane. Then we notice, in addition to the sickness and nausea, those symptoms to which the term of biliousness is applied. The person is dull, heavy, and languid, disinclined to exertion, mental or bodily, irritable, or peevish, the complexion is muddy, and the conjunctiva is slightly yellowish, and perhaps there is more or less severe headache. All of these point to disturbance of the functions of the liver; but biliousness forms an intermediate link between indigestion and its consequences, so that the explanation of the different factors of biliousness must be reserved for the succeeding lecture.

LECTURE II.

INDIGESTION, BILIOUSNESS, AND THEIR CONSEQUENCES.

Delivered before the Medical Society of London, January 19th, 1885.

BILIOUSNESS and indigestion are terms which we use so frequently together, and which are so intimately connected, that we do not always sufficiently distinguish between them. Yet it may be worth our while to inquire where the one begins and the other ends, and to ascertain, if we can, what the nature of their connection is.

The condition which we term biliousness is, in all probability, of complex origin. Its name points to the liver as its source, while its close connection with disturbances of the stomach might lead us to ascribe a gastric origin to it. The difficulty we have in ascertaining the exact causation of biliousness is no doubt largely due to the fact that disturbance of the liver affects the stomach and intestines, and disturbance of the stomach and intestines affects the liver. Indigestion and biliousness are, therefore, so closely associated in many cases, that we can hardly say where the mischief began unless we can trace it from the commencement, although in other cases we get a clue to the primary origin of the disease by noticing whether the disturbance of function is greater in the stomach or in the liver.

The close connection between the liver, on the one hand, and the stomach and intestines, on the other, is rendered inevitable by the arrangement of the blood-vessels in them.

On looking at the liver, on the one hand, we see that, with the exception of a small quantity which passes through collateral branches, all the venous blood returning from the stomach and intestines must pass through the liver before it reaches the general circulation (Fig. 4). Thus, any products of imperfect digestion are likely to affect the hepatic functions, and not improbably to derange them.

On looking at the stomach and intestines, on the other hand, we see that any hindrance to the flow of the portal blood through the liver will tend to cause venous congestion in them.

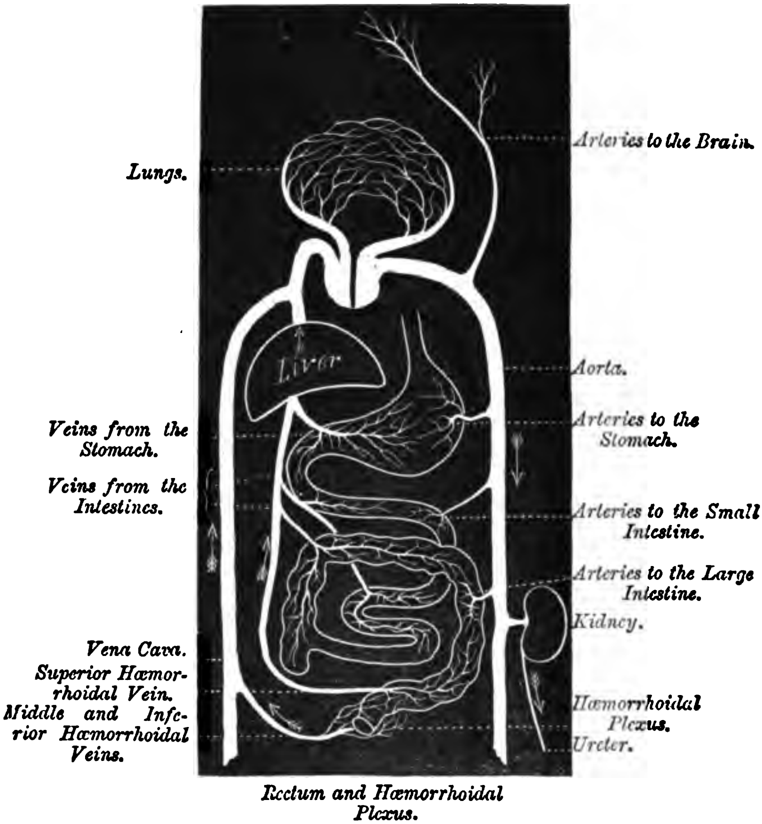
Lungs.
Veins from the Stomach.
Veins from the Intestines.
Vena Cava.
Superior Hæmorrhoidal Vein.
Middle and Inferior Hæmorrhoidal Veins.
Liver
Arteries to the Brain.
Aorta.
Arteries to the Stomach.
Arteries to the Small Intestine.
Arteries to the Large Intestine.
Kidney.
Hæmorrhoidal Plexus.
Ureter.
Rectum and Hæmorrhoidal Plexus.

Fig. 5.—Diagram of the veins forming part of the portal circulation. The pancreatic and splenic veins, although most important, have been omitted for the sake of clearness.

On looking at the liver in a *post mortem* examination, it seems so hard and firm that we are apt to think that it is not capable of much dilatation and contraction in the living body. But this notion is perfectly erroneous. I have made a number of experiments on the artificial circulation of blood through the livers of rabbits, and have been quite astonished to find what an elastic organ the liver is. When the bottle containing the blood was raised two or three feet above the liver, so as to increase the pressure under which the blood flowed through it, the organ expanded almost like a sponge, and again contracted when the pressure was diminished. We do not usually notice any very great differences of size in healthy livers; but the reason of this, no doubt, is that the pressure of blood in the portal vein is very low, and not liable to great fluctuations.

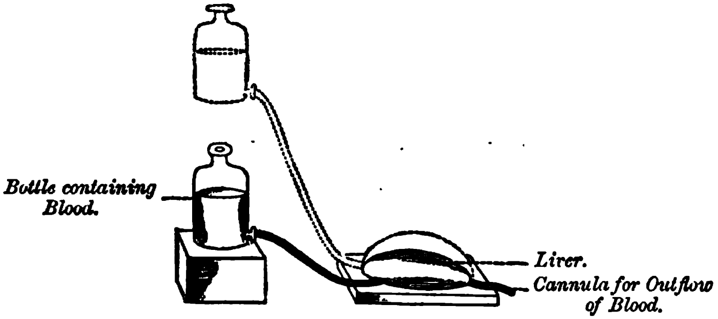

Fig. 6.—Diagram to show the effect of artificial circulation of blood through the liver, under different pressures. The continuous lines indicate the size of the liver, and the arrangement of the apparatus during circulation, under a low pressure. The dotted lines indicate the increased size of the liver, and the arrangement of the apparatus, with a high pressure.

But there was another point which struck me greatly in my experiments. Sometimes the blood would flow very easily through the liver, would, indeed, pour out from the hepatic vein in a full stream, as if no obstacle whatever had been presented to its flow through the hepatic capillaries. At other times, however, the flow would be slow and scanty, the blood evidently meeting with great resistance in the capillaries. These two conditions were sometimes found in the same liver at different periods of the experiment, and they appeared to depend to a considerable extent upon the quality of the blood which was circulating.

Bearing in mind this power of the liver to obstruct the circulation through it, we can readily see how a vicious circle may be formed: indiscretion in eating or drinking disturbs the digestive processes in the stomach and intestines; the products of imperfect digestion or of decomposition in the intestine being absorbed into the veins pass to the liver; they may there induce an obstructed flow through the hepatic capillaries; the venous blood returning from the stomach and intestines will no longer be able to find an easy passage into the general circulation, and venous congestion of the stomach and intestines will be the result. Such venous engorgement as this will interfere with gastric and intestinal digestion, and this again will react upon the liver. Here, then, is a vicious circle which it is necessary to break. It may be broken in two ways: (1) by fasting, so as to allow time for matters to right themselves; or (2) by the use of medicines, as we shall afterwards see.

In order to form a clearer idea of what is actually going on in biliousness, it may be well to take advantage of that fortunate accident by which Dr. Beaumont was enabled to examine the interior of Alexis St. Martin's stomach, and discover what was going on there. Although some authorities have denied that the state of the tongue is any index of the condition of the stomach, this is not borne out by Dr. Beaumont's observations, for he found that the state of the two corresponded pretty closely. A healthy tongue is of a pink colour, it is very slightly rough, and its surface is moist. The mucous membrane of a healthy stomach is of a pale pink colour, it has a slightly rough velvety appearance, and its surface is merely lubricated by a thin layer of mucus. When it is stimulated by the ingestion of food, the vessels dilate, the colour becomes heightened, and the gastric follicles secrete a clear transparent juice, which goes on accumulating, and trickles down the sides of the stomach. From experiments upon animals we know what changes irritation of the gastric mucous membrane will produce. A *slight stimulus*, as already mentioned, causes the circulation in the mucous membrane to become increased, and gastric juice to be abundantly secreted. This effect may be produced not only by the ingestion of food, but also, though to a slighter and more limited extent, by gently rubbing with a glass rod or feather. But if the stimulus be *excessive*, e. g. if the rod be rubbed roughly instead of gently over the mucous surface, an entirely different result occurs; the vessels, instead of dilating, contract, the stomach becomes paler, and a quantity of mucus is secreted. If irritation be carried still further, the animal shows signs of nausea, and may actually vomit.

In indigestion and biliousness we find several stages upon which the experiments just mentioned throw considerable light. In the first the appetite is increased rather than diminished; in the next stage the appetite fails; and in the further stage nausea or vomiting occurs. Even in the first stage, however, it not unfrequently happens that though the appetite is craving at first, a few mouthfuls of food are sufficient to satisfy it, and sometimes the appetite disappears merely at the sight of food, and is succeeded by nausea. In this case it is evident that the increased circulation in the stomach due to the introduction into it of food, or perhaps of the saliva excited by the expectation of food, has caused the condition of the mucous membrane to pass from the stage of slight to that of violent irritation.

Let us now see what conditions of the stomach correspond to these symptoms. Dr. Beaumont mentions that on one occasion St. Martin's tongue had a thin whitish fur, and the appetite was craving. On examining the stomach, several red spots and patches abraded of the mucous coat, tender and irritable, appeared spread over the surface. The digestion, too, was slower than usual, and seven hours were required for the gastric digestion of his dinner, instead of four and a half or five hours as usual. In this condition we cannot say that the liver is involved. The stomach is the only organ affected, and the disturbances of its functions are as yet but slight. Here we may say there is indigestion but not biliousness.

Two days afterwards, the indigestion had advanced further and the symptoms of biliousness had become superadded. His usual appetite was gone, the tongue was covered with a thin coat, no longer whitish but yellowish, the countenance was sallow, and on the interior of the stomach there were several deep red patches. A muslin bag which had been introduced with some food in order to test the rapidity of digestion, when drawn out was covered with a coat of mucus and yellow bile. The sallowness of the face, which had now appeared, may be taken as an indication that the liver had become affected, and that biliousness as well as indigestion was now present.

On the succeeding day the coats of the stomach were still unhealthy and of deeper red than naturally, with patches of a still deeper colour, and the mucous covering abraded in places. This deep colour indicates venous congestion and stagnation of blood, and is as different from the increased rosiness consequent upon the arterial dilatation and rapid circulation in healthy digestion, as the dusky hue in mitral disease is from the rosy flush of healthy exercise. This venous congestion indicates, I think, that the liver circulation is already becoming impeded, and that the impeded circulation through it is beginning to tell on the venous radicles of the portal system in the stomach, and probably also in the intestines. At this time the secretion of gastric juice was very scanty, and the digestion slower, as well as less perfect than usual.

In this instance, the indigestion seems to begin in the stomach, and involve the liver secondarily; but I am inclined to think, although it is difficult to prove, that there are some instances in which the indigestion may begin in the liver, and involve the stomach secondarily. Such cases I think are met with amongst persons who suffer from malaria. The malarial poison, whether it be a bacillus or not, appears to have a particular power to affect the liver, spleen, and vaso-motor centres. Under its action, the liver may sometimes swell up enormously, and I am inclined to think that it frequently causes an obstruction to the portal circulation, even when the general circulation is unaffected. In such cases, we may expect to find such symptoms of indigestion as would be likely to occur from venous congestion; and this I think is actually the case.

The usual symptoms of indigestion are flatulence, weight in the epigastrium, acidity, and pain; and it may be worth while to try and ascertain the conditions to which each of those symptoms is due.

First of all, let me take flatulence. Flatulence is due to the presence of gas in the stomach and intestines, which sometimes rolls about, producing borborygmi, or escapes upwards or downwards, producing eructations or crepitations. If the pyloric orifice be closed, the gas from the intestine will not escape into the stomach, nor gas from the stomach into the intestine; but if the pylorus be open, gas may pass freely from the stomach into the intestine, and *vice versâ*. An analysis of gas from the stomach shows that it consists to a great extent of nitrogen and carbonic acid, in much the same proportion as the nitrogen and oxygen of air. It is therefore probable that most of the gas in the stomach consists simply of air which has been swallowed, but from which the oxygen has been absorbed into the blood, and has been replaced by a corresponding quantity of carbonic acid. We are very apt to forget that, although the mucous membranes in man are much specialised, so as to perform a particular function most efficiently, yet their power is not entirely limited to the one function. The diffusion of oxygen and carbonic acid just mentioned through the walls of the stomach, shows us that the gastric mucous

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membrane has, though to a very slight extent, a respiratory action; and it is possible that other gases may be absorbed, though to a slight extent, by the gastro-intestinal mucous membrane. Indeed, I need not say it is probable, because we know for a fact that sulphuretted hydrogen may be absorbed in this manner. Some authors consider that the gastro-intestinal mucous membrane may secrete gas in large quantities. However this may be—and I think that it does not occur very frequently—it is probable that an interference with the absorption of gases may be a not unfrequent cause of flatulence.

In patients who suffer from malaria, attacks of indigestion are sometimes preceded, for two or three days, by a tendency to flatulence, without any other symptom. This may simply be due to disturbance of the stomach and intestines alone; but still I am inclined to think that, in these cases, the disorder begins in the liver, and not in the stomach; the portal circulation becoming obstructed first, and the gastric mucous membrane becoming congested secondarily.

After violent exertion, such as quickly running upstairs or trying to catch a train, one may observe that, at the same time that the heart is palpitating rapidly, and the breathing becoming short and difficult, there is a great tendency to flatulence. A similar condition is also found in patients with cardiac disease, and my friend Dr. Mitchell Bruce has called my attention to the frequency with which such patients complain of "heart-wind."

Another source of flatulence is the gas given off from the food in abnormal processes of decomposition. In cases of chronic gastric catarrh, for example, the secretion of gastric juice in the stomach is deficient; the food is digested slowly; the secretion, instead of being acid, is nearly neutral, or perhaps even alkaline; and fermentation may occur with evolution of gas. It is evident, however, that a considerable time is required to allow gas to be formed in any large quantity in the stomach: and therefore flatulence from this cause will not occur until some time after food has been taken, unless the pyloric sphincter be inactive. If the pylorus be open, gas may pass from the intestines into the stomach, and distend it; and such distension may occur at any time of the day or night, and is not necessarily dependent on the decomposition of food in the stomach.

I am inclined to think, however, that the most frequent cause of flatulence in the stomach is excessive swallowing of air. There is little doubt that boluses of food may be swallowed without air; but some fluids, especially those of a tenacious character, such as pea-soup and saliva, appear to carry down a good deal. Moreover, it appears to me that, when a small quantity of saliva is swallowed at a time, it does not completely fill the pharyngeal cavity, and that air is actually swallowed along with it. This does not matter—probably it is even beneficial—if it be not carried on to too great an extent. But we can easily see that, if a person goes on swallowing air after a meal is over, or in the intervals between meals, flatulent distension of the stomach may readily be produced. The conditions which give rise to frequent swallowing of air, so far as my observation goes, are—(1) a continued flow of saliva into the mouth; (2) a sense of irritation or tickling at the back of the throat; (3) a feeling of acidity in the stomach; and (4) a feeling of weight or oppression at the epigastrium or across the chest. I mentioned before that stimulation of the stomach produced reflex secretion of saliva; and, if the mucous membrane is irritable, the secretion of saliva may go on long after it ought to cease, and give rise to frequent swallowing and accumulation of air.

Acidity in the stomach causes frequent swallowing, perhaps because the discomfort is momentarily relieved by the alkaline saliva as it passes from the œsophagus into the stomach. A feeling of oppression or constriction across the chest, like a huge iron hand clutching it, is due to irritation of the vagus, as we know from Czermak's experiments. He had an exostosis on one of his cervical vertebræ, and, by compressing the vagus nerve between his finger and this exostosis, he could stimulate it so strongly as to stop his heart. Such stimulation produced also a feeling of constriction, or, as it is well called by the Germans, of *Beklemmung*. But irritation of the vagus can be produced in other ways than by compressing its trunk. Depressing emotions, such as sorrow, appear to act on the nerve-centre in the medulla, from which the vagus springs, and it may be stimulated reflexly from many parts of the body, and notably from the stomach. As Kronecker has shown that its action over the heart is temporarily abolished by the act of swallowing, we would naturally expect any one suffering from the feeling of thoracic oppression or constriction due to irritation of the vagus would swallow frequently, in order to obtain relief. This appears to take place when irritation of the vagus, with consequent oppression of the chest, are caused by grief, so that it has come to be popularly expressed in the phrase "swallowed his grief." So far as my observation goes, frequent swallowing also occurs in cases where thoracic oppression seemed to me to be due to reflex irritation of the vagus from the stomach.

Flatulent distension of the intestines may also be produced by excessive swallowing of air, and provided the pylorus be open, so that the air can pass through it, either temporarily, as when the contents of the stomach are passing out, or permanently, as in pyloric dilatation or paralysis. The enormous distension of the bowels in hysterical cases, and the rapidity with which it occurs, has often been a puzzle to medical men, and has led some to think that the only possible explanation is a rapid evolution of gas from the blood. From the observations of Ebstein and Zeckendorf,[1] however, it seems more probable that the true cause of this enormous dilatation is to be sought in a paralysis of the pylorus which allows the air to pass freely from the stomach into the intestines.

But whilst the air which has been swallowed is probably the chief agent in the production of gastric flatulence, the gases formed by decomposition in the intestine constitute the chief factor in cases of intestinal flatulence. They are found, on chemical examination, to consist of nitrogen, but in smaller proportion than the gas of the stomach, of hydrogen, of marsh-gas, and of carbonic acid; sometimes, also, there is a certain quantity of sulphuretted hydrogen. Some kinds of food are extremely apt to give rise to flatulence, and an analysis of Kolbe and Ruge[2] of the gases passed *per anum* by a man after different kinds of food, seems to show that it is the formation of marsh-gas which gives chiefly rise to the flatulence. The proportion of marsh-gas in their analyses amounted to a mere trace only, on milk-diet; to 27·5 per cent. on a flesh-diet; but it rose to no less than 55·9 when peas had been used as food.

Marsh-gas can only be formed in the absence of air, and so it is not produced in the stomach. It is sometimes, however, passed in eructations. C. Anton Ewald[3] had a curious case under his care, in which the patient was astounded to find, on trying to light a cigar, that inflammable gas was issuing from his mouth. Here, however, there can be little doubt that the marsh-gas was formed in the intestines, and passed through the open pyloric and cardiac orifices into the mouth.

Sulphuretted hydrogen is a product of the decomposition of albumen, and its odour is well known as that of rotten eggs. Although it is usually found in mere traces, if at all, in the intestine, it may sometimes occur in such quantity as to make the eructations very unpleasant, not only to the patient himself, but to his friends. When such eructations occur persistently, they are generally indicative of serious organic disease.

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[1] *Pathogenese der Bauchtympanie Inaug. Diss.* Gottingen, 1883.

[2] Quoted by Landois. *Text-book of Human Physiology.* Translated by Stirling, p. 372.

[3] Reichert und Du Bois-Reymond's Archiv., 1874, p. 217.

Another symptom of indigestion is acidity, and this is not unfrequently combined with flatulence. In some cases, as in that curious one of Ewald which I have mentioned, it may alternate with flatulence. As his patient expressed it, "sometimes he had within him a vinegar-manufactory, and at other times gas-works." The difference between these two conditions probably depended on the nature of the fermentation which was going on. As I have said, however, they are frequently associated, and I am inclined to think that a feeling of acidity frequently gives rise to flatulence, because the irritation which it causes in the stomach leads to frequent swallowing of saliva and air.

I have said purposely "a feeling" of acidity, because all cases of acidity do not depend, as is often imagined, on an increased proportion of acid in the contents of the stomach, but upon increased sensitiveness of the stomach or œsophagus, or upon some abnormal condition of the cardiac orifice, which allows the contents of the stomach to come more persistently into contact with the œsophageal mucous membrane than they ought to do. The œsophagus is much more sensitive than the stomach, as any one of you can easily discover for himself. If you will only swallow a bit of hot potato, you will be able to trace its progress right down the œsophagus to the pit of the stomach, and you will be able to ascertain precisely where your cardiac orifice is situated, because at that point the burning heat of the potato ceases to be felt as it drops into the stomach. Now this very point where the hot potato ceases to be felt, is the point where the feelings of acidity and heartburn are felt most strongly. A feeling of acidity coming on immediately, or very shortly, after a meal, is usually ascribed to increased proportion of acid in the gastric juice secreted by the stomach; while acidity coming on an hour or more after meals, is usually attributed to the formation of acid from the food by decomposition or fermentation.

There is no doubt that sometimes the contents of the stomach do become strongly acid from fermentation, and the matters vomited will not only burn the throat, but will set the teeth completely on edge, just as drinking a mineral acid would do. The secretion of gastric juice containing an excessive proportion of acid is, however, by no means proven.

It is quite possible that the stomach might secrete an excessively acid juice, but Dr. McNaught[1] has shown in a recent paper that, although heartburn and acidity were present to an extreme degree in his patients suffering from irritative dyspepsia, in no case was the acidity above the normal. The same thing has been observed by Professor Talma[2] of Utrecht, who has shown that the feeling of acidity is really only a feeling by putting into the stomach of persons who suffer from it an artificial gastric juice containing only the normal proportion of hydrochloric acid, a proportion so small that, as is well known, it hardly gives an acid taste to the healthy tongue, much less excites any feeling of pain. In these persons, however, this dilute acid caused a feeling of acidity and pain. It is evident, then, that the feeling of acidity in cases of nervous or irritable dyspepsia, which is often great and very painful, which is usually associated with a clean tongue, and often occurs in gouty patients, is dependent upon hyperæsthetic conditions of the mucous membrane, and not upon excessive secretion of acid by the stomach. At the same time, we must bear in mind that there are other cases in which acidity is due, not to hyperæsthesia of the mucous membrane, but to increased formation of acid by the decomposition of food.[3]

The stomach is much less sensitive than the œsophagus, and usually irritation of the mucous membrane in the body of the viscus gives rise to a feeling of weight rather than of pain—a point which seems to indicate that the pain of heartburn is due to irritation of the cardia, and of the œsophagus, rather than of the stomach itself. It not only occurs just at the point where a hot potato ceases to cause discomfort on its way downwards, but occasionally heartburn may be brought on by certain positions, and relieved by others. Thus, it sometimes happens, that the contents of the stomach cause an acrid burning feeling in the epigastrium when the person is lying down, and especially lying in the back, but the feeling disappears when the upright position is assumed. It sometimes happens, also, that a little escape of flatulence from the stomach will cause the burning feeling to travel up the œsophagus.

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[1] McNaught, *Medical Chronicle*, January, 1885, p. 330.

[2] Talma, *Zeitschr. fur klin. Med.*, Bd. viii. p. 414.

[3] Since this lecture was delivered I have seen that Reichmann (*Berlin. klin. Wochenschr.*, Dec., 1884, p. 768) has found that gastric juice appears sometimes to be secreted with a larger proportion of acid than normal, but he also insists on acid dyspepsia being a neurosis due to hyperæsthesia.

Frequently, however, an escape of wind gives relief. It is difficult to determine with certainty what the cause of this relief is, but I am inclined to think that distension of the stomach by flatulence may tend to cause heartburn by pulling the edges of the cardiac end of the œsophagus apart, and thus exposing the sensitive mucous membrane to the action of the acid contents of the stomach. When the distension is lessened by eructations, the cardiac end of the œsophagus will close more completely, and thus protect the sensitive surface of the œsophageal mucous membrane and relieve the pain.

The stomach itself rarely contracts with such violence as to give rise to pain like that of colic, but it appears sometimes to do so, and then the pain is excessive.

The intestines are much more liable to spasmodic contraction, giving rise to the pain of colic.

Another consequence of indigestion, or perhaps rather I ought to say of biliousness, is the occurrence of piles, which consist, to a great extent, of dilated hæmorrhoidal veins; and here, again, it is of great importance to remember that the blood from the intestines as well as from the stomach has to pass through the liver on its way to the general circulation (Fig. 4). No doubt some of the blood may return from the rectum by the middle and inferior hæmorrhoidal veins, without passing through the liver, but yet so much is returned through the portal vein, that any interference with the circulation through the liver will tell upon the veins of the rectum as well as those of the other abdominal viscera.

In the fact, however, that part of the blood returns from the rectum without passing through the liver, we see a new proof of the important function which the liver exercises in preventing the entrance of poisons into the general circulation. I have already mentioned that the liver has the power of excreting with the bile the poisons which have been absorbed by the portal blood, and also of destroying, to a certain extent, vegetable or animal poisons which are circulating through it. We would, therefore, expect that some of the vegetable alkaloids injected into the rectum would prove more fatal than when taken by the mouth, as they would be able to pass by the lower hæmorrhoidal veins into the general circulation without passing through the liver. This actually appears to be the case, for Mr. Savory has shown that strychnine is more poisonous when administered by the rectum than when given by the mouth.

While a retarded circulation through the liver may give rise to discomfort, and even pain, by causing congestion of the stomach or intestine, or by giving rise to piles, it is not without its advantages to the organism; for it is in the portal blood and in the liver itself that the process of building up the smaller molecules of peptones and of sugar into the larger ones of globulins and glycogen takes place. If these products of digestion are absorbed in large quantity, and pass too rapidly through the liver, so that they reach the general circulation without undergoing sufficient elaboration, they may either prove injurious to the organism or be excreted as waste products, or both. Indeed, we find this to be the case, for we frequently meet with affections of the respiration, circulation, and nervous system, which actually seem to be due to a kind of poisoning by products formed, either in the intestinal canal itself, or in the blood; and we also meet with cases in which sugar, peptones, and albumen are excreted by the kidneys, instead of being applied to the repair of the tissues.

I have elsewhere insisted strongly on the distinction which is to be drawn between glycosuria from the mere presence of sugar in the urine and the disease diabetes.[1] Simple glycosuria may occur in perfectly healthy persons, and, indeed, is much more frequent than people generally believe. If you will examine the urine of several healthy persons a couple of hours after breakfast, it is highly probable that you will find distinct evidence of sugar; for breakfast is a meal at which a much larger proportion of bread is eaten than at other meals, and at which, not unfrequently, a good deal of sugar is taken along with tea or coffee. But glycosuria depending on digestion is a transitory condition, whereas the glycosuria of diabetes is permanent. That glycosuria occurring during the process of digestion and absorption, is due either to some alteration in the circulation in the liver, or else to the absence from the portal blood of bodies which will build up the sugar into larger molecules, appears to be shown by an observation of Lehmann.[2] He found that sugar, injected into the mesenteric veins of a rabbit, during digestion, does not appear in the urine,

[1] On Diabetes, Reynolds' *System of Medicine*, vol. v.

[2] Lehmann, *Akadem. Proefschr.*, Amsterdam, 1873.

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[1] On Diabetes, Reynolds' *System of Medicine*, vol. v.

[2] Lehmann, *Akadem. Procfschr.*, Amsterdam, 1873.

Within the last few years, the occurrence of temporary albuminuria has been shown to be much more frequent than was previously suspected. In some statistics of life-insurance drawn up in New York,[1] one out of every eleven healthy persons who applied for life-assurance was found to present traces of albumin in the urine. Some experiments made by Leube[2] on 119 soldiers showed that in 4 per cent. the morning urine contained albumin, and albuminuria occurred in less than 16 per cent. after a severe march. The proportion found by the American insurance-office is intermediate between the two values found by Leube. It is, I think, considerably higher than what one is accustomed to find in examination of persons proposing for life-assurance in London, but corresponds nearly to the proportion of cases of temporary albuminuria (12 per cent.) found by Parkes[3] in hospital patients.

The prognostic importance ofalbuminuria is very great, not only in regard to the question of life-assurance, but in regard also to the dietetic and hygienic treatment of the individual. If we were to assume that because albumin is present in the urine the individual is suffering from serious disease, we should fall into as grave an error as if we were to suppose that every patient whose urine contained sugar was necessarily suffering from diabetes.

As Dr. Warburton Begbie says, "it is surely a satisfactory consideration that a condition of excessive albuminuria—the urine becoming nearly solid on the application of heat and nitric acid—may, after all, not indicate the existence of any structural change in the kidney.[4]

In my first lecture, I insisted, at some length, upon the probable difference in the size of molecules, and mentioned that, whilst small ones diffuse through animal membranes, large ones will not. In the process of digestion, large albuminous molecules get split up into smaller ones, which become absorbed and then undergo reconstruction, being built up again in the portal blood, in the liver, and in the tissues, into larger molecules. The albuminous substances of the blood appear to consist of such large molecules that they will not diffuse through the glomeruli of a healthy

[1] *Medical Investigations in Life-Insurance*, United States Life-Insurance Company, 261, Broadway, New York.

[2] Salkowski und Leube, *Lehre vom Harn*, p. 369.

[3] *On Urine*, p. 187.

[4] Albuminuria in Cases of Bronchocele and Exophthalmos, *Edin. Med. Journ.*, April 1874; and Begbie's *Works*, Syd. Soc. Ed., p. 355.

kidney, but the products of digestion—peptones and hemialbumose—will diffuse through the glomeruli, and pass into the urine, producing peptonuria or hemialbuminosuria.

It would appear also that white of egg has a smaller molecule than serum-albumin, for white of egg, injected under the skin, appears again in the urine, giving rise to pseudo-albuminuria, while serum of blood, or a solution of serum-albumin, injected in a similar way, causes no albuminuria. White of egg, when swallowed, does not usually pass into the urine as it does when injected subcutaneously, because it undergoes digestion in the intestinal canal, and is again built up after absorption into larger molecules. If taken in large quantity, however, some of it will escape digestion, will be absorbed unchanged, and will pass out through the kidneys and appear in the urine. I have tried the experiment by swallowing six raw eggs in succession. This quantity was insufficient to produce albuminuria, but it brought on such a violent headache and sickness, that I was deterred from ever making the attempt again. My friend, Dr. D'Arcy Power, who was making the experiment at the same time, succeeded in taking a sufficient number to produce albuminuria.

Coagulated albuminous bodies, such as boiled eggs or cooked meat, cannot be absorbed without being previously digested, and so are much less likely than raw eggs to produce albuminuria, even when taken in very large quantities. But, as I have already mentioned, the products of imperfect digestion, such as hemialbumose, behave in much the same way as egg-albumin, and may give rise to a form of albuminuria. Both egg-albumin and serum-albumin, when present in the urine, will cause a cloud on boiling, or on the addition of nitric acid; and yet it is obvious that the prognostic importance of the albuminous cloud, due to a dozen eggs swallowed one after the other, will be very different from that of an albuminous cloud due to degeneration of the kidney. It is, therefore, of great importance that we should distinguish between the different kinds of albumin present in the urine. This can be done, to a certain extent, by noting the point of coagulation, which is usually lower in the case of serum-albumin than it is in that of other albuminous substances. Time, however, will not allow me to enter further on this subject at present, and I have already discussed it elsewhere.[1]

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[1] Lauder Brunton and D'Arcy Power, *St. Bartholomew's Hospital Reports*, vol. xiii. 1877, p. 283.

But while the mere occurrence of a little albumin once or twice in the urine is not to be regarded as of necessarily fatal import, it is not to be lightly passed over as a thing of no importance, even although the albumin should prove not to be serum-albumin, but only hemialbumose. Clinical experience had indicated a connection between long-continued digestive disturbance and organic disease of the kidneys, and this was experimentally demonstrated by Stokvis, who found that hemialbumose injected under the skin once or twice will pass out through the kidneys without doing them any apparent injury, but if the injections be frequently repeated, the hemialbumose in passing through the kidneys appears to excite in them organic disease.

Another disturbance of the urine connected with digestion is oxaluria. When we find oxalate of lime crystals in the urine, we must not at once conclude that the patient is suffering from oxaluria, any more than we must conclude that he is suffering from diabetes or Bright's disease, because we find sugar or albumin in the urine. It is not the occasional occurrence, but the more or less persistent presence of crystals of oxalate of lime in the urine, that is associated with a peculiar group of symptoms, of which the most prominent is perhaps mental depression. Oxalate of lime present in the food will be absorbed from the intestine, and a considerable proportion of it, at least, will be excreted again in the urine. We may thus expect that oxalate of lime would occur in the urine after stewed rhubarb had been taken for dinner, but there are other kinds of food which do not contain oxalate of lime, or only contain it in very small quantity, and yet give rise to crystals of oxalic acid in the urine. When I was house-physician to the late Dr. Hughes Bennett, a glass containing the patient's urine was invariably placed at each bedside, and in going round the ward in the morning, I used frequently to notice in the urine the hummocky mucous cloud, with its sharply-defined white top, resembling the woolly clouds in a summer sky, which is characteristic of oxaluria. On inquiry, I found that this appearance almost always resulted from the patient's having had cabbage for dinner the day before. Now, according to Esbach, cabbage is really singularly free from oxalic acid, and the oxaluria which it produced must be ascribed to some other cause than simple excretion of oxalate of lime taken in the food. The true cause, I have little doubt, is digestive disturbance; cabbage being one of those articles of diet which is exceedingly apt also to produce flatulence.

We do not know exactly how oxalic acid is formed, either in the intestine or in the body, and any observations regarding oxaluria must be to a considerable extent speculative. Thus, according to some, it is said to be due to the oxidation of uric acid, whilst others say that imperfectly oxidised uric acid splits into oxalic acid and urea. Others attribute it to incomplete oxidation of sugar, starch, and fat, in the food, or of non-nitrogenous fatty acids formed within the body; while others again say that it is entirely due to the re-excretion of oxalic acid taken in the food, and that no formation of oxalic acid in the body occurs at all. In the midst of these conflicting opinions, it is somewhat difficult to come to any conclusion, but it is worth while for us to note two facts, and see if there is any connection between them. The one fact is that pointed out by Esbach,[1] who denies the formation of oxalic acid in the body, viz., that if a reducing agent, such as sulphuretted hydrogen, be added to a strong solution of urates, crystals of oxalate of lime are at once produced.

The other fact, which we have already mentioned, is the tendency of cabbage to produce oxaluria, and also to give rise to flatulence, which probably depends, as it does in the case of other vegetables, on the production of hydrogen or marsh-gas.

These two facts may be connected by the following hypothesis, that as most plants of the order *Cruciferæ*, to which cabbage belongs, contain sulphur in unusual quantity, it is possible that this may give rise to sulphuretted hydrogen or sulphides in the intestine, which will act as a reducing agent, and tend to reproduce in the body the experiment which Esmarch performed in the test-tube.

In cases of imperfect digestion, not only are substances that ought to be used for the nutrition of the body excreted as waste, but products of the digestive process may act as poisons to various parts of the organism, and produce serious symptoms.

A common symptom of dyspepsia is shortness of breath, but in many instances this is merely of physical origin, the distended stomach pressing the diaphragm upwards, and interfering with the expansion of the lungs. There may be shortness of breath, also, which is of cardiac origin, the circulation being affected by the digestion in a manner which we will presently discuss. In addition to these different kinds of shortness of breath, however, we meet with actual asthmatic conditions, in which the entrance of air into the lungs appears to be prevented by contraction of the involuntary muscular fibres surrounding the bronchi. The pathology of asthma is too little understood to enable us to say whether the bronchial muscles are made to contract by abnormal substances circulating in the blood, and irritating either the muscular fibres or their nerves; or whether the contraction is reflex, and is excited by a congested condition of the mucous membrane lining the respiratory passages.

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[1] *Journal des Connaissances Med.*, 1883, p. 155.

There is another condition, however, namely, cough, which is frequently associated with indigestion—so frequently, indeed, that a kind of cough has come to be known as "stomach-cough." This popular name, though perhaps not scientifically correct, yet conveys a true impression. Cough is a reflex action. Reflex acts are generally adopted for a purpose. Cough is fitted to expel irritating substances from the respiratory, and vomiting from the digestive, passages. Irritation of the stomach will not of itself produce reflex coughing; the act corresponding to it is vomiting. Irritation of the respiratory passages, on the other hand, produces reflex coughing, and not vomiting. Nevertheless, it so happens that the action of an irritant, either in the digestive or pulmonary tract, may be aided by irritation elsewhere; and thus it happens that, when there is congestion of the pharynx and the upper part of the trachea, which is not in itself sufficient to produce coughing, the presence of any irritant in the stomach will assist this irritation in the respiratory passages, and coughing will occur. Thus I have observed a paroxysm of coughing coincident with acidity in the stomach, in a case where the fauces were much congested; and possibly also (although I did not make a laryngoscopic examination) the larynx and trachea may also have participated. This irritation was not in itself sufficient to cause coughing, but the additional irritation of the acidity in the stomach at once excited cough; and when the irritation was removed from the stomach by a dose of bicarbonate of soda, which neutralised the acid, the cough at once ceased. Now it is just at the pharynx—at the place where the respiratory and digestive tracts cross one another—that irritation is most likely to give rise both to coughing and vomiting; and this point, as we might readily expect, is one which is very readily affected by digestive disorders. I saw a very instructive case of this some time ago. A gentleman suffered from cough, which gave him a good deal of trouble; the back of his pharynx was congested, and I ordered him a gargle. For some time it was not a bit the better, and then, for some reason or another, somebody else gave him several blue pills, and the cough disappeared (cf. p. 172).

The heart is very liable to be affected by digestive disturbance, and, like the lungs, it may be affected mechanically; for there is nothing between the heart and the stomach but the diaphragm; and when the stomach gets distended with gas, it may interfere with the action of the heart, and give rise to functional disturbance. This may evidence itself in faintness, in the shortness of breath which I have already mentioned, or in an intermittent pulse. The intermittent pulse, however, as well as the faintness, may be produced reflexly through the nervous system, instead of merely mechanically. Sensory nerves run from the stomach to the medulla oblongata, and, through these fibres, the heart may be reflexly affected. The resulting effects may differ according to the kind and amount of irritation; sometimes palpitation being produced from an affection of the acceleratory fibres, and sometimes a slow or intermittent pulse by an affection of the inhibitory nerves (*vide* pp. 148, 149).

It is quite possible that, in addition to the effect produced upon the heart directly and reflexly by the stomach, both the heart itself and the vessels may be influenced by substances absorbed from the intestine into the general circulation, and carried, not only to the heart itself, but to the nerve-centres which regulate both it and the vessels. We have not as yet, so far as I know, any distinct evidence of alkaloids having an action like that of digitalis or other cardiac poisons, being formed in the intestine, and passing from it into the general circulation.

We know, however, that alkaloids, having an action like muscarine, and having, like it, a powerful action on the heart and vessels, as well as on the intestinal canal, are formed by the decomposition of albuminous substances outside the body; and, in all probability, similar substances may be occasionally formed in the intestinal canal. It is probable that a microbe is the cause of cholera, but the symptoms occurring in the disease are probably due to the action on the tissues of a poison generated by the microbe, and not of the microbe itself, just as intoxication is due to the alcohol produced by the yeast-plant, and not to the action of the plant itself, on the nervous system and blood.[1]

An interesting question, on which the formation of alkaloids in the intestine may throw some light, is, "What is the cause of sudden death in some gouty patients?" Such a case as the following is by no means rare. A hale old man, of a gouty family, has seemed unusually well, strong, and in good spirits. He eats an unusually hearty dinner, goes to bed, and is found dead next morning. In such a case, *post mortem* examination reveals nothing. The kidneys may be contracted, but the change in them has been of a chronic nature, and gives no clue to the cause of the patient's sudden death, unless it be that contracted kidneys will not excrete so quickly as healthy ones, and if a substance should be absorbed from the intestinal canal capable of acting as a cardiac poison, it will be more likely to cause death in a patient with contracted kidneys than in one with healthy kidneys.

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[1] For a fuller discussion of this subject, *vide* Researches relating to the Pathology and Treatment of Cholera, by Lauder Brunton and Pye-Smith, *Practitioner*, November 1884, *et seq.*

But whether alkaloids which affect the heart are formed in the intestine or not, we have evidence that other alkaloids are formed which affect the nervous system very powerfully. In a paper which I wrote some years ago, I pointed out the great resemblance between the symptoms met with in indigestion, and in those in poisoning by curare. When an animal is poisoned with this substance, and the motor nerves begin to be paralysed, the increasing languor and difficulty of movement appear to strike the animal as strange, and it frequently looks at itself as if it were itself puzzling over its unwonted condition. The very same thing may not unfrequently be noted in cases of dyspepsia; an unwonted languor comes over the patient, generally about two hours after a meal, and the patient wonders why his limbs feel heavy, like lead, and why he should have such a disinclination to exercise, either bodily or mental. I may, perhaps, here be allowed to quote from the paper to which I have just referred[1] (*vide* p. 255), as the analogy which I then pointed out between the languor occurring in dyspepsia and curare poisoning has since received such remarkable confirmation, so that the languor would appear, from recent researches, to be due in both cases to alkaloidal poisoning.

"The feeling of muscular weakness and lassitude, which I have already had occasion to mention as frequently coming on about two hours after meals, is not uncommonly met with in persons belonging to the upper classes, who are well fed, and have little exercise. It is, perhaps, seen in its most marked form in young women, or girls who have left school, and who, having no definite occupation in life, are indisposed to any exercise, either bodily or mental. I am led to look upon this condition as one of poisoning, both on account of the time of its occurrence, during the absorption of digestive products, and by reason of the peculiar symptoms, namely, a curious weight in the legs and arms, the patient describing them as feeling like lumps of lead. These symptoms so much resemble the effect which would be produced by a poison like curare, that one could hardly help attributing them to the action of a depressant, or paralyser, of motor nerves or centres. The recent researches of Ludwig and Schmidt-Mühlheim render it extremely probable that peptones are the poisonous agents in these cases, and an observation which I have made seems to confirm this conclusion, for I found that the weakness and languor were apparently less after meals consisting of farinaceous food only. My observations, however, are not sufficiently extensive to absolutely convince me that they are entirely absent after meals of this sort, so that, possibly, the poisoning by peptones, although one cause of the languor, is not to be looked upon as the only cause."

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[1] Lauder Brunton, Indigestion as a Cause of Nervous Depression, *Practitioner*, October and November, 1880.

At the time when I wrote this, alkaloids had not been shown to be formed in the body, and I was inclined to attribute the languor to the poisonous action of peptones; but now the evidence which we have to prove the presence in the circulation of alkaloids formed in the intestine is just the same as that which we have to show their presence when injected subcutaneously. When curare is injected under the skin of a frog, we know that it has been circulating in the blood, not only because of the effects it has produced upon the motor nerves, but because, if we take a little of the frog's urine, we find that the poison has been excreted by the kidneys, and that the urine will produce symptoms of paralysis when injected under the skin of another frog. Now, Bocci[1] has found that, from human urine, an alkaloid can be extracted which possesses exactly the same action as curare. This alkaloid has not been shown as yet to be identical with the alkaloid obtained by Brieger[2] from the peptones formed by digestion of fibrin with gastric juice, to which he has given the name of peptotoxin. But whether these alkaloids be absolutely identical or not in their chemical constitution, they appear to be identical in their action, both acting like curare in paralysing the peripheral terminations of motor nerves.

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[1] Bocci, *Arch. per le Science Med.*, vol. vi. No. 22, 1883.

[2] Brieger, *Ber. d. Deutsch. Chem. Gesell.*, xvi. pp. 1186 and 1405, 1883.

I have already insisted more than once on the function of the liver in arresting and destroying poisons which have been absorbed from the alimentary canal; and I have already pointed out that excessive bitterness is of the common characteristics of organic alkaloids. Now, there is a curious point about the bile which has, I think, not obtained the attention it deserves. "As bitter as gall" has come to be a household phrase, and we frequently notice that the bile vomited in cases of indigestion is very bitter indeed, so bitter as to be nauseous. But bile is not always bitter, as I once found to my astonishment when making some experiments with digitalis. I had taken nearly half a grain of pure digitalin on each of two consecutive days, and the poison began to produce, as one of its effects, very violent vomiting. During this, I brought up a quantity of matter resembling both in appearance and taste the yolk of a fresh egg, and perfectly destitute of bitterness. Not having eaten any eggs, I could not see what it could be but bile, but I was so very strongly impressed with the notion that bile was always bitter, that I did not put it down in my notes definitely as being bile, but only as yellow and liquid, somewhat like the yolk of an egg.[1] The absence of bitterness from freshly-secreted bile has also been observed by Mr. W. E. Green, of Sandown, in the case of a biliary fistula; and I am inclined to think that the bitterness which is supposed to be characteristic of bile does not really depend upon biliary constituents, but upon admixture with some alkaloidal substance derived from digestion. Some years ago, Dr. Bence Jones and Dr. Dupré showed that, in the liver and in other animal organs, an alkaloid was present resembling quinine in many of its reactions, and though, for some years past, their observation has fallen out of notice, it is beginning to acquire new importance, especially since it has been shown that quinine is very closely associated with phenol and other bodies of the aromatic group, some of which are formed in the intestine.

It is very curious to observe how views of all sorts seem to turn round and round again, though not so much in a circle as in a spiral, for at each turn they generally have advanced a little. For a long time the liver was regarded as a most important organ, and well it might be, for it is the largest gland in the body; and yet, for a while, it has sunk into comparative unimportance, its chief function being considered to be the secretion of bile. But to regard the liver in this light, is just about as rational as to think that an

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[1] *On Digitalis, with some Observations on Urine*, p. 67. London: Churchill, 1868.

Atlantic steamer has been built for the express purpose of throwing out from its sides the two jets which are formed by the waste water from the engines. The condensed steam may be utilised, and so may the bile, but the condensation of steam is not the main object of an Atlantic steamer, nor is the secretion of bile the chief function of the liver. If we look at the liver, not as a mere secreter of bile, but as the organ in which probably the most important synthetical processes in the body go on, and in which the small molecules resulting from the digestion of food are built up into the more complex ones required to supply the waste of the various tissues in the body, we shall at once see a good reason for its enormous size, and for the important position which it occupies. If we recollect also its function as a porter to watch over the entrance into the circulation, and prevent the passage of noxious substances from the stomach or intestine, we shall readily understand how a slight disturbance of its function should give rise to such important functional alterations in other organs.

The Greeks showed their wisdom when they placed the seat of Hypochondriasis under the ribs, and when they connected depression of spirits with disorder of the liver by giving to it the name of Melancholy (μελας, black, and χολη, bile).

In her *Histoire de ma Vie*, George Sand says on this subject: "Whether it is the bile which has made me melancholy, or the melancholy which has made me bilious—this would resolve a great metaphysical and physiological problem, which I will not take up—it is certain that sharp pains in the liver produce symptoms in all those that are subject to them, of profound sadness and a wish to die. Since my disease first appeared I have had happy years, and when it seized me again, although I was in the condition most favourable to love of life, I felt myself suddenly seized by a desire for eternal repose."[1]

Sydney Smith describes in a very humorous way the connection between dyspepsia and low spirits. He says:[2] "Happiness is not impossible without health, but it is of very difficult attainment. I do not mean by health merely an absence of dangerous complaints, but that the body should be in perfect tune, full of vigour and alacrity. The longer I live the more I am convinced that the apothecary is of more importance than Seneca; and that half the unhappiness in the world proceeds from little stoppages, from a duct choked up, from food pressing in the wrong place, from a vexed duodenum, or an agitated pylorus. The deception as practised upon human creatures is curious and entertaining. My friend sups late; he eats some strong soup, then a lobster, then some tart, and he dilutes these esculent varieties with wine. The next day I call upon him. He is going to sell his house in London, and to retire into the country. He is alarmed for his eldest daughter's health. His expenses are hourly increasing, and nothing but a timely retreat can save him from ruin. All this is the lobster; and when over-excited nature has had time to manage this testaceous incumbrance, the daughter recovers, the finances are in good order, and every rural idea effectually excluded from the mind. In the same manner, old friendships are destroyed by toasted cheese, and hard salted meat has led to suicide. Unpleasant feelings of the body produce corresponding sensations in the mind, and a great scene of wretchedness is sketched out by a morsel of indigestible and misguided food. Of such infinite consequence to happiness is it to study the body." [1]

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[1] *Histoire de ma Vie*, George Sand. Vol. xviii. p. 295. Paris: 1855.

[2] I am indebted for this to my friend Dr. De Havilland Hall, who showed it to me in Tanner's *Practice of Medicine*, 7th ed., vol. ii. p. 100.

Usually, the melancholy and depression of spirits which are associated with disorder of the liver are attributed, like the bitter taste in the mouth, to the bile, which is circulating in the blood. No doubt, bile is a muscular poison; but we have already seen that the bitterness of bile is probably not inherent in the secretion itself; and there is, therefore, good reason for doubting whether the bitter taste in the mouth is due to bile. Moreover, we sometimes find the bitter taste with very little evidence of the presence of bile in the blood, the conjunctiva being, at most, only slightly tinged: whereas we sometimes see patients who are deeply jaundiced, and yet make no complaint of any such taste. For similar reasons we may regard it as probable that the depression does not depend upon biliary matters, but rather upon the noxious substances which have been able to pass through the liver and enter the blood.

We may regard, indeed, the association of bile with other noxious substances in the blood in very much the same way as the association of disagreeable smells with noxious properties in gases. The presence of a disagreeable smell often warns us of the presence of noxious gases; but these may occur in their most deadly form with little or no disagreeable smell; and, on the other hand, we have disagreeable smells which are not associated with any danger.

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[1] *A Memoir of the Reverend Sydney Smith*, by Lady Holland, vol. i. p. 125. London. 1855.

As a rule people are now fully alive to the risks they run from poisoning by sewer-gas, or, to put it more widely, from poisoning by products of decomposition outside the body; but perhaps we do not all keep before us so clearly as we ought the fact that inside the body there are all the conditions for the formation of putrefactive products, and the most favourable arrangement for their rapid absorption. As the late Mr. Darwin once remarked to me, after reading my paper on Indigestion and Nervous Depression: "It is a wonder that we are alive," running, as we do, a constant risk of poisoning by the products of our own digestion. Slight poisoning does, no doubt, occur, and perhaps more frequently than we generally suspect. Severe poisoning is less common, but still may take place. One of the commonest constituents of sewer-gas is sulphuretted hydrogen; and Senator[1] described, in 1868, a most instructive case in which the patient became collapsed, and nearly died, with all the symptoms of poisoning by sulphuretted hydrogen generated in his own intestines.

A particular class of nervous symptoms, in which hypochondriasis and depression of spirits are accompanied by a deposit of oxalate of lime in the urine, has been thus described by Dr. Golding Bird: "The patients are generally much emaciated, excepting in slight cases, extremely nervous, painfully susceptible to external impressions, often hypochondriacal to an extreme degree, and, in very many cases, labour under the impression that they are about to fall victims to consumption. They complain bitterly of incapability of exerting themselves, the slightest exertion bringing on fatigue. Some feverish excitement, with the palms of the hands and soles of the feet dry and parched, especially in the evening, is often present in severe cases. In temper they are irritable and excitable; in men the sexual power is generally deficient, and often absent. A severe and constant pain, or sense of weight across the loins, is generally a prominent symptom, with, often, some amount of irritability of the bladder. The mental faculties are generally but slightly affected, loss of memory being sometimes more or less present."[2]

But in this condition we find the same difficulty of attributing the symptoms to the presence of oxalate of lime that we found in ascribing the depression of spirits in biliousness to the presence of bile in the blood; for, as Dr. Roberts[1] points out, "these symptoms may be present in typical completeness without oxaluria, and, conversely, oxaluria may exist in its highest intensity, and even go on to the formation of a mulberry calculus, without evoking any of the above-mentioned symptoms."

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[1] Senator, *Berlin. klin. Wochenschr.*, 1868, No. 24.

[2] Golding Bird, *Urinary Deposits*, 5th ed., p. 251.

In this condition then, as in biliousness, we are almost forced to ascribe the symptoms to the presence of some poison, of whose presence in the blood the oxaluria in one case and the yellowness of the conjunctiva in the other are merely indications.

The irritability which occurs in gouty persons is another example of nervous disturbance due to the presence of injurious substances in the blood, and their action upon the nervous system. But this has been already so graphically described by Murchison in his book on *Diseases of the Liver*, that I must refer you to it, and to the classical work of Garrod, as the subject is too wide to enter upon here.

There is only one so-called minor ailment connected with digestion which I will mention now, and that is headache. As I have pointed out elsewhere,[2] headaches are usually dependent either upon the presence of decayed teeth, or of some irregularity in the eyes, more especially inequality of focal lengths between the two eyes, or astigmatism. The site of headache depending upon decayed teeth varies with the teeth affected. The headache depending on inequality of vision is frequently frontal or occipital, although it may also be temporal (*vide* p. 105).

I am at present uncertain regarding the precise way in which indigestion produces headache; but I may remark that, as a rule, in headaches of this sort, the upper surface of the eyeball will be found to be excessively tender, and that the tension within the eyeball itself appears to be increased, so that sometimes the eyes feel like marbles or metal bullets under the finger when they are pressed. Another curious point that I have observed regarding headaches is that, as persons who are subject to them in their youth grow older, bilious headache is very apt to be replaced by giddiness; and that this change occurs about the time when the eyes are beginning to get a little hypermetropic, and the person begins to find the need of spectacles for reading.

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[1] Roberts, *Urinary and Renal Diseases*, 3rd ed., p. 79. London: Smith, Elder, and Co.

[2] Headache, Neuralgia, and other Nervous Diseases connected with the Teeth, *Transactions of the Odontological Society of Great Britain*, 1880; and on the Pathology and Treatment of some Forms of Headache, *St. Bartholomew's Hospital Reports*, vol. xix. p. 399, 1883.

LECTURE III.

PREVENTIVE AND CURATIVE TREATMENT OF DIGESTIVE DISORDERS.

Delivered before the Medical Society of London, February 2nd, 1885.

In my first lecture, I mentioned that the function of digestion, like health generally, may be strong or weak. A strong digestion is capable of withstanding all sorts of adverse influences, while a weak digestion can remain undisturbed only under the most favourable circumstances.

When any disturbances have occurred in the digestive function, no matter whether it were strong or weak originally, the first step towards restoring it to health is to remove, if possible, any disturbing causes which may still be acting upon it.

One of the commonest of these is imperfect mastication. As I have said several times already—but the importance of the subject will excuse the reiteration—the first step in the process of solution is mechanical disintegration. Children are not long in learning this truth, for they soon find out that they get a fuller flavour from a hard sweetmeat if they break it with their teeth, than if they simply suck it. The child thus gets the sweetmeat quickly dissolved, and its sense of taste is more thoroughly gratified, but the sweetmeat does not remain so long in the mouth. If children of an older growth would remember this early experience, and apply it to their food generally, there would be less indigestion.

Man is a low-pressure engine, and works almost all his organs considerably under their full power. All around us in a town or city we see men who, in a walking tour, could do twenty, thirty, or forty miles without the least inconvenience, and yet in their ordinary avocations they probably do not walk two. In the country, on the other hand, we find men of good brains, who have perhaps distinguished themselves at college by their mental powers, by their close application, and by the long hours during which they could work, and who yet in their daily life rarely set themselves a harder mental task than to understand the leading article of a daily paper. It is the same thing with the other organs of the body. A healthy stomach can usually digest a good deal more than it is called upon daily to do. A healthy kidney can excrete twice or thrice as much as it ordinarily does; and thus, in fact, we see that, when one kidney is removed, the organism frequently seems hardly to feel the loss, all the waste-products being excreted as usual.

But there is a limit to all things, and that limit is more easily reached in some cases than in others. As some one has shrewdly remarked, we have two kidneys and two lungs, but we have only one stomach, and therefore there is the greater reason why we should not overburden it. When a young man is called upon for extra exertion, either bodily or mental, he is able to meet the demand by making a spurt; but, as he grows older, this power gradually lessens. The same is the case with the stomach. Boys' stomachs can digest almost anything, though half-chewed green apples may sometimes prove too much even for them. In a youth, the stomach will digest the food even when bolted half-chewed; but, as the man approaches middle age, it resents this treatment; it will no longer make a spurt to do the work of the jaws as well as its own, and indigestion is the consequence.

Imperfect mastication frequently arises from too short a time being allotted for a meal, or from the mind being occupied during the meal with the idea of something to be done afterwards. It is curious sometimes to watch the phases of mastication varying in the same person during a single meal, according to the ideas which cross the mind. In some people, whenever the idea of something to be done occurs to them, motor energy seems to be evolved, and finds expression in rapid movements of the jaws and bolting of the food. It is, therefore, evident that, during meals, all ideas of action to be taken by the individual himself should be banished from the mind. In sensitive persons, also, it is well to banish the idea of action to be taken by others, because some persons have such strong sympathies that they throw their own personality into that of others, so that, if we watch them listening to a

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hesitating speaker, we see their lips moving and their fingers twitching.

Persons who are taking their meals alone very frequently read during them. From what I have said, it is obvious that what they read at this time should not have reference to any of their avocations, nor even to anything which may interest them very strongly. such as politics, unless it be presented in an amusing form, as in *Punch*. But a solitary meal should be avoided if possible, for the mere presence of a companion, and, still more, occasional conversation, acts as a pleasant stimulus, and tends to maintain the nervous activity to which I referred in my first lecture as an important factor in perfect digestion.

Another cause of imperfect mastication is the condition of the teeth. Sometimes the teeth and gums are tender, or one or more of the teeth may be decayed, and the discomfort or pain occasioned in them by mastication leads people to bolt their food, or to masticate on the other side of the mouth, if the tenderness be limited to one side. But where this is the case, we not unfrequently find that several teeth have already been lost on the side with which such a person does chew, and that these teeth have been lost in such a way as to make the act of mastication a mere farce. When all the teeth are gone, the person may chew perfectly well, not only by means of artificial teeth, but also without them. One of the puzzles of my childhood was, how my grandfather, an absolutely toothless old man, was able to eat and enjoy hard toast. But every tooth in his head was gone, and his gums were like the mandibles of a turtle. It is not the complete, but the imperfect, removal of the teeth which is the source of mischief. We not unfrequently find that the teeth have fallen out in such a way that only one or two are left behind, which oppose one another so slightly that they are of very little use indeed for chewing, but they thoroughly prevent the gums from coming together, and leave large spaces in which the food can escape mastication completely. The remedy in such a case as this, is to get in false teeth; for few people, now-a-days, care to be absolutely without teeth at all.

But the effect, even of thorough mastication, upon the food will vary a good deal according to the nature of the food itself; and tough substances, which can with difficulty be comminuted, will be more indigestible than those which are readily broken up. Now new bread is proverbially unwholesome, and the reason for this is not far to seek. If we take a piece of a hot roll and try to pulverise it between the finger and thumb, we find that it is more or less tough and tenacious, and that we can hardly do more than tear it apart into little bits. If we take a piece of stale bread, on the contrary, we can easily break it up into fine powder, which, of course, is much more readily acted upon by the digestive juices than lumpy flakes of new bread. Biscuits are also readily powdered; and crisp dry toast, although not so easily broken up between the finger and thumb, is still readily digestible, because it must be broken up by the teeth before it can conveniently be swallowed, for otherwise it would scratch the throat, although lumps of new bread of a similar size would slip down the œsophagus easily. Buttered toast is a different thing, as it cannot be readily pulverised, any more than new bread. Buttered muffins and suet dumplings are other examples of a similar kind to buttered toast. Potatoes are generally regarded as indigestible, and are forbidden to dyspeptics, whilst stale bread is allowed. It is possible that there may be other reasons for this indigestibility than simply difference of physical condition, but I have little doubt that one reason at least is the fact that very many people—indeed, I think most people—are apt to swallow potatoes in lumps without thorough mastication, and these lumps will be very slowly acted upon by the digestive juices.

The fine subdivision of fatty food is also of great importance in regard to its digestion. Many people cannot bear to eat the fat of hot mutton, but yet they can eat the same when it is cold. If we try to pulverise a piece of hot mutton-fat and a piece of cold mutton-fat we will see that the difference is much the same as that between a piece of new and of stale bread; and probably this is one reason, though there may be others, why hot mutton-fat is so liable to make people sick. But mutton-fat may be eaten hot by persons with delicate stomachs if it is properly subdivided by admixture with farinaceous food. If, for example, it be cut up very small, and mashed up with potatoes, even children may take it without difficulty, and mutton-fat and milk is an old-fashioned and useful remedy. The more minutely we can subdivide the fat, the more easily is it digested. I have already discussed this subject elsewhere, but it is of such practical importance that I may, perhaps, be allowed to repeat part of what I have said before (p. 9). If we were asked to take a pat of butter whole, the very idea of it might make us sick, but we have no difficulty whatever in taking the same amount of butter spread upon bread. Many years ago, my friend Professor Hugo Kronecker asked me the question, "How should butter be spread in a sandwich? should the whole of it be put on one slice of bread, and the other slice of bread simply put over the top of it, or should the pat of butter be divided into two halves, and one of them spread on each piece of bread?" I was uncertain how to reply. He answered the question himself, and said that "the butter should be divided into two halves, and one spread on each piece of bread, because, in this way, the butter is more minutely subdivided, and thus not only gives a more agreeable taste, but is more readily digested." In buttered toast, we get the agreeable taste from the minute subdivision of the fat, but the advantage obtained from this is more than counterbalanced by the difficulty in breaking up the toast, which I have already mentioned.

In regard to butcher's meat, also, there are great differences, depending both on the kind of meat used and its condition at the time of cooking. I mentioned in my first lecture, that meats which have short, easily disintegrated fibres, such as fish, the breast of a fowl, or mutton, are much more readily digested than those having long or tough fibres, such as beef. But a great deal depends, also, upon the condition of the meat at the time of cooking. I once got a most useful lesson on this point. I went into a restaurant, and ordered a beef-steak, as I had previously got them exceedingly good and tender at the same place. But that day, all my efforts to masticate the steak were in vain, although I went on till my jaws actually ached with the exertion. On complaining to the waiter, and asking where he had got that tough old meat, he said it was not old, but, though young, it was too new. They had had an unusual number of customers that day; all the usual supply of beef-steaks had been consumed, and they had sent to the market for more, but had got back some meat killed that morning. Now, the old Romans, who were great epicures, used to eat still newer meat than this. They suffocated their fowls in wine, and cooked them forthwith. We see, then, that meat is tender under two conditions—(*a*) when it is perfectly freshly killed, and (*b*) when it has been kept for a sufficient time. If we analyse these conditions, we see that the essential point in them is simply this: meat which is cooked before *rigor mortis* appears, or after it has passed off, is tender; but meat cooked while *rigor mortis* still exists is sure to be tough.

In the case of game, the practice of keeping the meat until it is tender has been overdone, and it is not unfrequently kept until it is actually commencing to decompose. The taste for "high" meat is an acquired one, and is, I think, a morbid one. It is also, I think, not without some danger, for not only may the products of decomposition formed in the meat, before it is cooked, be injurious, but decomposition will be rather apt to occur more readily in the intestinal canal. The gastric juice, no doubt, has a considerable antiseptic power, and so has the bile, but still these powers may be overtaxed, and eating high meat is one of the ways in which this may be done. It is, however, rather extraordinary to what an extent the consumption of decomposing food may be carried without any immediate injury, as we see amongst the Esquimaux and Icelanders.

The effect of keeping may, to a certain extent, be imitated by the application of a vegetable digestive ferment. In the West Indies, a tough beef-steak is rendered tender by rubbing it with the juice of a fresh papaw fruit, which contains a ferment, papain, having an action very much like the trypsin of the pancreas.

Another cause of imperfect digestion is, I believe, bad cooking. Even if we leave out of account the actual physical detriment to the food in the way of hardness, or toughness due to bad cooking, the absence of a pleasant flavour will in itself tend greatly to interfere with digestion.

The mere thought of agreeable food is sufficient to make the mouth water, not only in man, but in animals. I remember once seeing a striking instance of this. While walking one evening, I saw a dog sitting opposite the door of a butcher's shop, gazing intently at the meat inside. Two long strings of saliva were hanging down from its jaws, half-way to the ground. Its attitude of eager expectancy was so striking, that I could not help going into the shop to buy something for it; but it was sitting almost directly in the doorway, so that my passing through disturbed its delightful dream, and off it went.

We have already seen that the secretion of saliva is the first link in the chain of digestive processes. The saliva stimulates the secretion of gastric juice, and the gastric juice again stimulates the flow of bile, and possibly also of the pancreatic juice. Moreover, pleasant and repulsive food will act on the stomach through the brain; so that the idea of pleasant food will excite appetite, but the very idea of unpleasant food will excite disgust, and even bring on nausea and vomiting. Other things being equal, then, food that is well cooked and savoury will be much more digestible than the same food cooked or served in an unappetising manner.

Even in regard to serving, there is much to be learned in this country from the French and Germans. In many a restaurant in London we find the table-cloths spotted and greasy, the salt-cellars and mustard untidy, the knives and forks dirty; and, as for a table-napkin, such a thing is in many of them unknown. In a French or German restaurant of a similar class, the table-cloth is very likely to be of coarser linen, but scrupulously clean; everything would be put down in a tidy and appetising fashion, and a clean napkin would be served to each guest. The food itself may be no better, perhaps not so good, but the way in which it is served would make all the difference to a delicate appetite.

In my first lecture, I spoke of cookery as a powerful moral agent, capable of influencing men's opinions and feelings to a very great extent. That food itself is a moral agent has been long recognised, and has found expression in the proverb, "A hungry man is an angry man;" but that the moral influence depends on the way in which the food is cooked, as well as on the food itself, is not so generally admitted. And yet it has long been known, for we read that Isaac directed his first-born son, Esau, to prepare savoury meat, such as his soul loved, so that, after he had eaten thereof, he might bless his first-born with all the fervour of which he was capable.

Considering the different effect upon the appetite of well cooked meat and of unsavoury food, it would be strange if they both excited equally pleasant feelings, and had an equally beneficial effect upon the temper.

Some may think that, in speaking of cookery as a moral agent, I am greatly exaggerating its power; and they may regard it as idle folly if I go still further, and say that cookery is not only a powerful moral agent in regard to individuals, but may be of great service in regenerating a nation. Yet, in saying this, I believe I am speaking quite within bounds, and I believe that schools of cookery for the wives of working men in this country will do more to abolish drinking habits than any number of teetotal associations. I do not at all mean to say that the vigorous efforts of teetotal societies, Good Templars, Blue Ribbon Army, and others, have been altogether a failure, but I do not think that their plan will ever be crowned with complete success, and I believe there is a better way of attaining their object.

Supposing you go to visit a friend and find him taking a wet pack. He is lying in bed, wrapped up in blankets so that he cannot move hand nor foot; a fly settles on his nose, and he begins making faces to try and remove it. You do not like to see him make faces, and wish him to stop. Which would be the most rational method of doing so? Would it be to exhort him to summon all his fortitude to keep his face still, notwithstanding the annoyance, or would it be better for you to drive away the fly? No doubt it might be an excellent moral training for him to use his self-control and keep his countenance placid notwithstanding the irritation, but the simpler and more effective method would be to drive away the fly. Moreover, in nine cases out of ten, his power of self-control would be insufficient; and this is exactly what occurs with persons who have a strong desire for intoxicating liquors.

Many years ago, I met, in a teetotal journal called the *Adviser*, with an account of an old drunkard, who uttered the bitter complaint, "The neighbours always speak of my drinking, but they never speak of my drouth."[1] The old man was in the right; and, if we are to abolish drunkenness, we must remove the thirst which leads to drink. I have discussed the causes, physical and moral, of this thirst more at length elsewhere;[2] and the only ones with which I shall concern myself now are bad food and imperfect cookery. In my first lecture, I mentioned that, so long as the food is only in the intestinal canal, it is still outside the body as far as nutrition was concerned; and thus the malnutrition which gives rise to a craving for alcohol may be a consequence of imperfect digestion, as well as of an insufficient supply of food.

I have spoken of food and of cookery as moral agents, but a clear-headed clergyman in New York has perceived that dentistry may be a moral agent, and he has insisted on all the people attending his mission-chapel keeping their teeth in good condition. If anyone has bad teeth, he is sent to a dentist, who fills or extracts them as may be needed. A dentist is supplied who does the work for nothing, if the patient cannot afford to pay. Since the clergyman adopted this plan, he has had very much less trouble from drunkenness in his congregation.[3]

The relation between the consumption of alcohol and the quality of the cookery has recently been investigated in Switzerland, and it has been shown that, where the food is insipid and unappetising, the people have recourse to a glass of "schnaps" to make up for the deficiency.[1]

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[1] Scotch word for thirst.

[2] *The Influence of Stimulants and Narcotics on Health. The Book of Health.* London: Cassell and Co.

[3] The *New York Medical Record*, February 24th, 1883, p. 224.

We have no experiments at present to show how savoury and unsavoury food, respectively, affect the circulation in the brain; but it seems highly probable that savoury has a much more stimulating action than unsavoury food on the cerebral circulation. I have insisted a good deal upon the important vascular changes which are produced by the act of swallowing, and these changes appear to afford an explanation of some curious phenomena. It is frequently stated that a glass of beer, slowly sipped, will intoxicate a man; whereas, the same quantity, swallowed at a draught, will have little or no effect. I do no not know how far this is true, but it is not the kind of statement that would be readily invented, so that I think there must be foundation for it in fact. We can easily see that the disturbance of the circulation, consequent upon frequent sipping, may so aid the effect of the alcohol that intoxication may ensue, although the alcohol alone could not have produced this effect. But, while frequent sipping may be thus used, on the one hand, to produce intoxication, it may be employed, on the other, in the cause of temperance. Some time ago, I saw in an American periodical a cure for drunkenness. The person was advised, whenever the craving came on, to sip a glass of cold water. At first sight, this may seem a poor substitute for a glass of whisky, and very unlikely to remove the craving for alcohol; but, as I have mentioned in my first lecture, a glass of cold water, slowly sipped, has more effect upon the pulse than a glass of brandy swallowed at a draught; and may therefore be a very efficient substitute, indeed, for alcoholic beverages.

To prevent any misunderstanding on this point, I should mention that the effect of sipping upon the pulse is not a permanent one; it lasts while the sipping is continued, if the sips be taken at short intervals; but it passes away after the sipping ceases. While its effect upon the pulse is thus greater for the time than that of alcohol, it is much less permanent. When I wrote my paper on "Nervous Depression as a Consequence of Dyspepsia" (p. 255), the effect of sipping upon the action of the vagus had not been discovered, but its stimulant action had been observed clinically (I believe by Sir Andrew Clark); and I then recommended that a glass of soda-water, with or without the juice of a lemon squeezed into it, should be slowly sipped when the feeling of weakness came on, and a biscuit eaten along with it, if desired.

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[1] *Die Ernährungsweise der arbeitenden Klassen in der Schweiz. von Dr. Schuler.* 1884, Bern. Stämpflische Buchdruckerei.

But, besides cooking and mastication, we have to consider a most important question—the kinds of food which a person may eat. In a healthy man, the best guide, both as to quantity and quality, is the appetite. Food that is eaten with a relish is, as a rule, wholesome; and sometimes it is rather astonishing to find how people's instincts guide them to what is suitable for them, in utter defiance of all *à priori* notions. As Dr. Austin Flint very sensibly puts it, "the diet should be regulated by the appetite, the palate, and by common sense."

Too great a regulation of the diet is sometimes very injurious; and this, I believe, is more especially the case in persons of a nervous temperament. I have already mentioned that some cases of acidity, and even of severe pain, do not depend upon any abnormal acidity of the gastric juice, nor of the contents of the stomach; nor yet do they depend upon any imperfection in digestion, for Leube has found that, in such cases, digestion is often performed very thoroughly and rapidly indeed. The pain in these cases depends upon hyperæsthesia; and, if the patient begins to cut down his diet, one article after the other may disappear, and the mischief will only become worse. The nervous system becomes more and more irritable as the blood becomes more impoverished, and the system may break down completely from inanition. In such cases, as I shall have afterwards to mention, forced feeding, or, as we may term it, stuffing the patient, is of the greatest possible service.

But, as Dr. Flint wisely puts it, the palate and the appetite alone will not serve as reliable guides to the quantity and quality of food. They must be regulated by common sense, or, in other words, by experience. We find this in the case of animals. A horse turned loose into a field of new clover may eat so much as to kill himself by over-distension of the stomach and intestines. A cow turned loose for the first time into a pasture in which colchicum, or other poisonous plants, grow, may eat of them at first, and be ill in consequence; but, after it has become acquainted with their injurious action, it will avoid them. The appetite which regulates the quantity of food, and the palate which regulates its nature, must both be trained; and we must also use our experience, in order to make sure that we do not misinterpret their demands. When a person has been fasting for many hours, his appetite becomes ravenous, and he is apt to eat far more than is good for him. We are sometimes apt to treat ourselves as we occasionally treat others, and be in too great a hurry to gratify the demands of our own appetites, as well as to answer the questions, or grant the requests made to us by others. Solomon says of the man who hastens to reply to a question before he has fully heard it out, that, "it is a folly and shame to him," and the same is true of the way in which we sometimes treat our appetite.

I remember once hearing a story of a boy who stole a marble. On his mother chiding him and asking him whether his conscience had not told him not to touch the marble, the penitent culprit said: "No, mother, I grabbed quick." He had not given his conscience time to speak, and we frequently treat our appetites in like manner.

Let us take the ordinary case of a man who has breakfasted at eight in the morning, and has had nothing to eat till seven at night. He sits down with a voracious appetite, and gorges himself until he becomes semicomatose, and resembles a bloated boa-constrictor rather than a rational being; or else his overloaded stomach rebels, and a fit of violent vomiting and purging induces his relations to send in a hurry for their medical man, and urge him to come with the utmost speed, for So-and-so is dying of cholera. Yet the poor appetite was not to blame. The nervous system had been starved and wanted food; but, as I have already insisted more than once, food in the stomach is outside of the body for the purposes of nutrition, and requires to be absorbed before it is available for the wants of the organism. No doubt the stomach, as it became gradually distended, informed the brain, through its nerves, that food was on its way. But still, this was not sufficient, and the appetite remained unappeased. By the time enough food has been digested and absorbed to satisfy the cravings of the nervous system, too much had been put into the stomach to its detriment.

If, instead of hurrying the food down, the person had been content to eat slowly, with intervals between his courses, as, for example, if he had been put down to a *table d'hôte* abroad, the chances are that the dinner would have done him no harm, for the long intervals between the courses would have allowed some of the food first taken to be digested and absorbed long before the end of the dinner was reached; and the craving appetite being thus lessened, the temptation to overeat would have been removed. Not unfrequently we hear people say that they are well when living abroad and dining at a *table d'hôte*, although the food that they get there is not nearly so good as what they get at home. The reason, in all probability, is, that they are obliged to spend more time over their meal, and are unable to swallow it down, or, as the Americans phrase it, "to get outside of it" so quickly as they can at home.

The remarks of Dr. Beaumont in regard to the question of appetite, as a regulator in eating, are so apposite that I shall quote them. Since they were written, medical opinion has passed to the opposite extreme from that which he denounces, and starving, rather than stuffing, has become the fashion. A reaction has set in against the starving system; but let us hope (although we can hardly expect) that it will not pass beyond the just views of moderation which Dr. Beaumont advocates. He says: "There is no subject of dietetic economy about which people err so much as that which relates to quantity. The medical profession, too, has been accessory to this error, in giving directions to dyspeptics to eat until a sense of satiety is felt. Now, this feeling, so essential to be rightly understood, never supervenes until the invalid has eaten too much, if he have an appetite which seldom fails him. Those even who are not otherwise predisposed to the complaint, frequently induce a diseased state of the digestive organs by too free indulgence of the appetite. Of this fact, the medical profession are, generally, not sufficiently aware. Those who lead sedentary lives, and whose circumstances will permit of what is called free living, are peculiarly obnoxious to these complaints. By paying particular attention to their sensations during the ingestion of their meals, these complaints may be avoided. There appears to be a sense of perfect intelligence conveyed from the stomach to the encephalic centre, which, in health, invariably dictates what quantity of aliment (responding to the sense of hunger and its due satisfaction) is naturally required for the purposes of life; and which, if noticed and properly attended to, would prove the most salutary monitor of health, and effectual preventive of disease. It is not the sense of satiety, for this is beyond the point of healthful indulgence, and is Nature's earliest indication of an abuse and overburden of her powers to replenish the system. It occurs immediately previous to this, and may be known by the pleasurable sensation of perfect satisfaction, ease, and quiescence of body and mind. It is when the stomach says enough; and is distinguished from satiety by the difference of the sensations—the former feeling enough, the latter too much; the first to be produced by the timely reception into the stomach of proper aliment in exact proportion to the requirement of nature, for the perfect digestion of which a definite quantity of gastric juice is furnished by the proper gastric apparatus. But, to effect this most agreeable of all sensations and conditions—the real Elysian satisfaction of the reasonable epicure—timely attention must be paid to the preliminary processes, such as thorough mastication, and moderate or slow deglutition. These are indispensable to the due and natural supply of the stomach at the stated periods of alimentation; for, if food be swallowed too fast, and pass into the stomach imperfectly masticated, too much is received in a short time, and in too imperfect a state of preparation, to be disposed of by the gastric juice."[1]

Appetite and palate have both their own work to do in regulating the quantity and quality of the food; but each of them requires, as Dr. Flint says, to be regulated by common sense, for otherwise they sometimes disagree, and the pleased and tickled palate sometimes endeavours to force down a much larger quantity of savoury food and delectable dishes than appetite declares to be either necessary or good for the organism. Sometimes the palate is tempted simply by savoury dishes at meal-times, but sometimes idleness adds to the temptation. Dr. Combe very sensibly remarks on this point: "But it is with idle people as with children. Leave them without occupation, and their chief amusement will then be derived from the indulgence of their appetites. Hence the prevalent pastime of forenoon visits to the pastry-cook's, where the appetite is indulged with as little regard to the real wants of the system, or the condition of the stomach, as if digestion were meant merely as an appendage to taste. Many young persons do themselves serious injury in this way, and then complain loudly of the discomfort which attends the subsequent indigestion of a heavy dinner. To relieve the weakness, arising not from exhaustion, but from the oppression of satiety, they resort to wine, as if, by adding fuel to the fire, they could reasonably hope to extinguish the flame."[2]

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[1] Beaumont, *Experiments and Observations on Digestion.*

[2] Combe, *Physiology of Indigestion*, ninth edition, by James Coxe, M.D., 1849, p. 77.

When pushed beyond a certain point, the appetite rebels, and "the full soul loatheth the honeycomb;" but before this point is reached, a good deal more than enough may have been eaten; and if the same process be repeated every day, serious mischief will ultimately result, and the more accommodating the appetite is, the more serious will the mischief be. Many a man has been saved by a weak stomach, which punished its owner by sickness or headache whenever he tried to overburden it, and thus checked his tendency towards excess at the very outset. Where the stomach and intestines are more accommodating, and continue to digest all that is put into them, the burden of the work is shifted elsewhere, and either the liver fails to reconstruct the new material with which it is deluged, or the tissues are poisoned, and the overworked kidneys become degenerated.

The palate, like the appetite, sometimes makes demands which are apt to be misconstrued. As the late Professor Laycock observed, patients recovering from a severe illness not unfrequently have a strong desire for salt herrings, pork, or ham, things which would be almost certain to disagree with them if their appetite were indulged. But the fact is that the patients do not want the pork or herring; what they really desire is salt, and they crave for these articles because they contain salt. If salt be given to them in the form of a mixture, their appetite is appeased, and the harm is avoided which the herring or ham might have caused.

If we were to attempt to lay down a diet-table, containing all the things that a person, whether healthy or dyspeptic, may eat, the task would be endless; it is much simpler to say what he may not eat. The oldest diet-table in the world might have been a very long one if everything that might be eaten had been named; whereas it was very short—"Of every tree in the garden thou mayest freely eat, but"—and here follows the one exception, of which Adam might not eat without injury. The next diet-table is still more extensive, "Every living thing that moveth shall be meat for you, even as the green herb have I given you all things; but"—and here again comes the single exception—"the flesh with the life thereof, which is the blood thereof, shall ye not eat." In a third diet-table, intended not for mankind generally, but for people under peculiar conditions, we still find the same rule followed; the foods that were to be eaten being classed together under one or two sweeping definitions, and only a few exceptions mentioned by name. Dyspeptics may be regarded as a peculiar class of people, requiring fuller instructions as to diet than healthy people, and a few general directions to them are by no means out of place. Thus, they may be directed to avoid new bread, buttered toast, muffins, and pastry, all of which are difficult to disintegrate, and sweets, which may undergo acid fermentation. They may be told to eat fish, or to prefer meat which has a short fibre, like mutton, chicken, or game, rather than to take those meats where the fibres are long and tough, like beef.

There are some substances taken as food which are utterly indigestible. We know that prehistoric man was fond of strawberries, because the seeds of some, which a man, ages and ages ago, had eaten and voided unchanged, still remain to inform us of the fact. Most seeds, when whole, are indigestible; and on this quality, indeed, their distribution over the earth's surface depends. Even when broken, like the kernels of nuts or almonds, they are sparingly digestible; and the same is the case with the skins of fruits, and the harder fibres and the stalks of vegetables.

Where the intestines are slow to act, such things as strawberries, raspberries, figs, nuts, prunes, and apples, may be allowed, and even recommended; but, where the intestines are irritable, all such things must be forbidden. Acid fruits are not only indigestible in themselves, but are apt to leave irritation behind; and Dr. Beaumont found that, an hour after giving St. Martin some raw, ripe, sour apples, the stomach was full of fluid and pulp which was quite acrid, and irritated the edges of the fistulous opening, "as is always the case when he eats acescent fruits or vegetables." The acrid condition went on increasing to the end of an hour and a half, and, at the end of two hours, the mucous membrane appeared irritated, although the apple had passed out of the stomach into the intestine, probably in an undigested condition, and, as we know in other cases at least, it would then be apt to produce diarrhœa.

Some drinks are peculiarly liable to cause indigestion; amongst these are sour wines, some kinds of beer, and tea. Sour wines, especially if taken regularly, are apt to bring on a condition of gastric catarrh; and, in certain conditions of the system, a single glass even of good wine appears to act almost like poison. It seems to undergo acetic fermentation in the stomach, and produces acidity, discomfort, or pain. I do not know what these conditions of the stomach are in which a single glass of good wine will produce this effect, even in persons to whom it is not usually injurious. I have noticed, however, that sometimes this tendency to acidity is associated with a hyperæsthesia of the mucous membrane of the œsophagus, so that p ortor sherry causes an unpleasant burning feeling all the way down the gullet, while usually nothing more would be felt than a pleasant warmth, if any sensation were observed at all.

Tea is very apt to cause a feeling of acidity and flatulence. Sometimes the acidity comes on so soon after the tea has been taken, that it is difficult to imagine that the feeling can be due to any actual increase in the acidity of the contents of the stomach. It seems much more probable that the feeling is due to some effect of the tea, either on the sensory or motor nerves of the stomach, or perhaps on its muscular fibres. Tea in the afternoon, two or three hours after lunch, will sometimes bring on acidity almost immediately; and I am inclined to think that this is due either to its producing increased sensibility of the gastric mucous membrane, or, what is perhaps still more probable, to its altering the movements of the stomach, so that the mucous membrane of the cardiac end of the œsophagus becomes exposed to the action of the contents of the stomach. These are much more acid two hours after a meal than they are immediately after it; and they will thus produce a much more irritating action upon a sensitive mucous membrane.

Tea contains a quantity of tannin, as we can readily perceive by the black spot which a drop of it will leave upon a steel knife, and it contains also caffeine and volatile oil. The effect of the tannin is to interfere very considerably with the digestion of fresh meat; and there are many people in whom tea, taken along with fresh meat, will upset the digestion. It does not interfere with the digestion of dried meat, such as ham and tongue; the fibres of these having already become shrunk and toughened in the process of curing.[1] Tea at breakfast is not so apt to cause indigestion, probably because bacon or tongue are more frequently taken along with it at this meal than fresh meat, and also because the long interval which has elapsed between breakfast and supper or dinner allows the stomach to become completely empty before any new food is put into it.

A part of the mischief wrought by tea in the lower classes is due to their allowing it to infuse for a long time, so that a large quantity of tannin is extracted. This danger may be avoided by simply allowing boiling water to stand in the tea-pot for five minutes or so, and then pouring it off into another tea-pot, where it may be kept hot for a length of time without undergoing any change. Another reason is that they drink it extremely hot. Heat is a powerful stimulant to the heart, and a cup of hot tea is, therefore, much more stimulating and refreshing than a cold one; for not only does the hot tea act more powerfully on the heart through the nerves of the stomach, but the heat will reach the heart directly through the thin diaphragm. The practice of sipping the tea almost boiling hot is, however, apt to bring on a condition of gastric catarrh.

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[1] J. W. Fraser, *Action of Infused Beverages on Peptic Digestion*, *Journ. of Anat. and Physiol.*, vol. xviii. p. 31.

Coffee does not affect the stomach to such an extent as tea. In its preparation, however, a substance called caffeon is produced; and this, along with the caffeine which is present in both coffee and tea, appears to dilate the abdominal vessels, and cause a feeling of fulness in the abdomen, with a tendency to piles in some persons.

Cocoa is less liable to cause acidity or abdominal discomfort than tea and coffee; but, when continued for some time, it is apt to give rise to those symptoms already described under the head of biliousness. In all probability, this depends partly on the amount of fat it contains, as cocoatina, from which the fat has been removed, is less likely to produce the symptoms than chocolate.

Another cause of imperfect digestion is fatigue. When we start on a walk, it does not matter much whether the road be rough or not; any little obstacle is avoided with ease, and we thread our way over rough stones, through tangled heather, or over a quaking bog, without difficulty. Our nervous system is in full vigour, and preserves perfect co-ordination amongst the movements of the different parts of the body; so that one helps the other, and all difficulties are surmounted. But when we are tired, the case is very different; a little roughness in the road will cause us to stumble, and an unexpected stone may give us a sudden fall. The wearied nervous system no longer co-ordinates the movements of the various parts of the body, so that they no longer work together for a common end.

The same thing occurs with the various parts of the intestinal canal. In my first lecture, I described the mechanism by which the acts of chewing and swallowing appeared to act as stimulants to the circulation and nervous system, and thus to ensure the proper co-ordination between the functions of the mouth, stomach, intestine, and liver. But, if the nervous system be exhausted by previous fatigue, or debilitated by illness, the requisite co-ordination may not take place, and indigestion or biliousness may be the result. How often do we find that the meal taken by a person immediately after a long railway-journey disagrees with him, and either causes sickness, diarrhœa, or a bilious headache. Forty winks after dinner is by no means a bad thing; but forty winks before dinner is frequently much better. How often do men who have been working hard all day, with their mental faculties continually on the stretch, go home and have dinner forthwith. Exhausted as they are, how can they expect to digest properly what they eat? Almost the only saving point is, that many of them live some distance from their place of business, and have a short time during the homeward drive to sit still and rest. This is sufficient for some, especially for young men; but it is insufficient for elderly men, and they ought to make a point of having a little rest at home before dinner. Some men, unfortunately, are so misguided as to believe that exercise after a hard day's work will do them good; and, instead of utilising the little time they have for rest after a day's labours are over, they walk three or four miles, or take a tricycle-ride of several more, before dinner. The consequence is that, under the combined mental and physical strain, their digestion is impaired and their strength broken down.

Effects, somewhat similar to those of fatigue, may be produced by depressing or disturbing mental emotions, or bodily conditions. We know how readily excitement of almost any kind will destroy the appetite in some people, and depressing emotions will do it in almost every case. We not unfrequently hear of girls in whom consumption appears to have been brought on by an unfortunate love affair. If we accept the view that consumption depends upon the presence of the tubercle bacillus, we might, at first sight, think that there can be little or no connection between consumption and disappointed love; but the depressing effect of the disappointment

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[1] Amongst the good old-fashioned precepts of health, not the least important is—"After dinner rest a while." I have lately seen an illustration of its utility in a patient who invariably finds albumin in his urine if he begins work (as an analytical chemist) immediately after dinner. A rest of twenty minutes, or even of twenty-five, is insufficient to prevent the occurrence of albumin, but if he rests half an hour or more the urine remains perfectly free from albumin even after a considerable amount of work.

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will lessen the digestion, impair the nutrition, and render the body more likely to afford a suitable nidus for the bacillus.

Different emotions appear to affect specially, not only different organs, like the heart and intestinal canal, but different parts of the digestive apparatus. Thus, disgust affects the stomach, causing vomiting; fear is seen, in some of the lower animals, to affect the rectum, causing defæcation; compassion affects the small intestine, producing borborygmi;[1] worry and anxiety, although they act upon the stomach and lessen appetite, appear to have a very special influence upon the liver. They sometimes produce jaundice, and not unfrequently cause glycosuria; indeed, most of the cases of diabetes that one meets with in middle-aged persons appear to originate in worry or anxiety.

In treating cases of indigestion, or its consequences, due to injurious mental influences, the depressing cause must be removed if possible. If this cannot be done, change of air and scene, with exercise short of fatigue, and in the open air, are serviceable. Bromide of potassium, either alone or combined with bromide of ammonium, is very useful, both in lessening the sensibility of the nervous system to worry, and in procuring sleep, for as Shakespeare truly says:

> "Sorrow's weight doth heavier grow
> Through debt that bankrupt sleep doth sorrow owe."

It is sometimes difficult to distinguish exactly between depression that may be called purely mental, and depression due to physical causes. I have already spoken of the mental depression due to disorders of the liver, but disorders of the genital organs are also apt to give rise to mental depression, and to digestive derangements. It is difficult to say whether the genital troubles give rise to mental depression through the medium of the digestive system, or whether they disturb the digestion through the emotions; at all events, dyspepsia due to uterine and other genital disturbances is not to be overlooked. Uterine dyspepsia[2] presents the usual symptoms of nervous dyspepsia, epigastric pain, acid eructations, and sometimes vomiting after each meal. The bowels are not unfrequently much constipated.

Here, also, the first thing to do is to remedy, if possible, the condition of the uterus; next, to lessen the nervous excitability by bromides or other sedatives, and to clear out the intestines by means of purgatives.

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[1] Isaiah xvi. 11, and lxiii. 15; 1 John iii. 17.

[2] *New York Med. Rec.*, and Kisch, *Berlin. klin. Wochensch.*, No. 18, 1883.

We are sometimes too much inclined to regard digestion as a process which goes on in the intestinal canal only, and to forget how very intimately it is related to the other functions of the body. But we cannot rightly understand either the pathology of indigestion, or the action of remedies, unless we constantly bear in mind the intimate relation which exists between the alimentary canal and the rest of the body.

In the treatment of indigestion we employ several classes of drugs, one of which is known as gastric tonics. These consist chiefly of vegetable bitters. There can be no doubt whatever about their practical utility, but it is not very easy to say how they act. They increase the appetite, lessen flatulence, and tend to diminish the discomfort and languor which are apt to accompany indigestion. It is possible that part of this effect is due to their power of lessening putrefaction; but there can be little doubt that they have other actions which are not yet thoroughly understood. One of the most useful of all is nux vomica; and the great benefit derived from its use is probably due to its stimulating action on the nerve-centres by which the co-ordination of the digestive processes is rendered more perfect.

Another class of remedies is that of carminatives, which tend to disperse flatulence. Amongst the most powerful of these are ethers and volatile oils of various kinds, which probably act by increasing the movements of the stomach and intestines, and altering them in such a way as to allow the gases they contain to escape upwards or downwards. In addition to these, however, we have other remedies which, probably, act in a different way. Charcoal lessens flatulence, and is generally supposed to do so by absorbing gases in the stomach. But the power of charcoal to absorb gas is very slight when it is wet; and as it will be wetted by the fluid in the stomach after it has been swallowed, it probably has but a very slight absorbing effect on the gases there. It is much more probable that it acts merely as a mechanical stimulant, and that its use in the stomach is similar to its use as a tooth-powder in the mouth. In the healthy stomach, the layer of mucus which covers the lining membrane is very thin; but, in abnormal conditions, the mucous membrane may be covered with a thick coating of slimy mucus, which will tend to prevent absorption. The mechanical action of the charcoal will tend to remove this coating, and at the same time the friction which it exerts on the mucous membrane will tend to increase the flow of blood through the vessels; charcoal will thus aid absorption in a double way by removing the mucus, and by increasing the circulation. If this idea regarding the action of charcoal be correct, we should expect that other inert powders would have a similar action, and this, I think, is the case. Subnitrate of bismuth, for example, is so insoluble, that it probably acts to a great extent mechanically; binoxide of manganese has a similar action; and cases of dyspepsia are reported which have been successfully treated by the administration of fine sand.

I should not venture to say, however, that preparations of bismuth act in a mechanical way only, for soluble preparations of bismuth such as the citrate have a sedative action. Moreover arsenic and bismuth belong to the same chemical group, and a small quantity of arsenic, such as one drop of Fowler's solution, given before meals seems to have a sedative action somewhat resembling that of a comparatively large dose of bismuth.

Closely allied to carminatives are stimulants, and foremost among these come alcohols and ethers. Ether, although perhaps the most powerful of all, is used less frequently alone than alcohol, but ethers mixed with alcohol, in the form of wines, are very frequently employed indeed.

The question of the employment of stimulants is one which has been greatly discussed, and which is apt to give rise to much excitement. Some would utterly abolish stimulants of every kind, while others would not only use them, but abuse them.

There is a great deal of practical truth in the definition of dirt as "matter in the wrong place." The white paint which gives brightness and cleanliness to the woodwork of a house, ceases to be clean, and becomes dirt, when it sticks to a lady's dress; and the pipeclay which the soldier uses to clean his belt dirties his uniform. So long as alcohol is in its place, it is beneficial; when it is out of place, it becomes hurtful. The difficulty here is to define the place for alcohol. Some would deny that it has any place at all, and assert that it is utterly injurious at all times, and in all places. But such assertions are valueless; they contradict the common experience of mankind, and defeat their own end by their extravagance. It is no use to deny the existence of facts, for they will continue to be facts, whether we allow them or not. What we have to do is to open our eyes to their existence, and regulate our conduct accordingly.

The question of the general use and abuse of alcohol is far too large to be entered upon here, and I have already considered it at some length in the paper which I read before the Society (p. 140), and which received its approval, as well as in others which I have written subsequently.[1] The substance of the opinion which I have always held is, that so long as a man is young and healthy, he does not require alcohol, and is better without it. I think it better in every way for people to abstain entirely from the use of alcohol until they reach the age of manhood.

I do not think it a sin to use alcohol in moderation as a luxury, provided always that it be used in moderation, not only for the individual, but for the individual at the particular time at which it is taken, for what is moderation at one time would be excess at another.

In my first lecture, I described the advantage that I had derived from a good dinner with plenty of wine. I partook freely both of the food and wine, yet I did so in what was moderation for me on that particular occasion. I was exhausted with overwork, and depressed by the effects of a cold, and neither the food nor the wine caused undue excitement at the time of dinner, nor injurious effects afterwards. Had I repeated this dinner frequently—let us say every night, twice a week, or even at longer intervals—or had I even taken it when in health, the quantity of food and wine—which was moderate for me at the particular time that I took that dinner—would have been excessive, and I should probably have suffered accordingly.

In regard to the use of alcohol in dyspepsia, I think St. Paul's advice to Timothy is very good, "Drink no longer water, but use a little wine for thy stomach's sake, and often infirmities." It is not the young and strong who require wine, but the infirm and the aged. In many cases, attention to the rules I have given in regard to rest before dinner, to mastication, and to the quantity and quality of food, will do away with the necessity for any additional stimulus to the stomach in the way of alcohol. But I think there can be no doubt that, even when all these things are attended to, there are some persons who are the better for a little wine at dinner. These are generally, as I have said, either elderly, or a little below par. When I say below par, I mean in reference to their surroundings, for some of them may be very much above their fellow-men, physically or mentally, and yet be below par in reference to their work, or to the surroundings which put upon them such a heavy strain that they require some additional stimulus to help digestion.

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[1] The Action of Alcohol. *Contemporary Review*, Vol. XXXIII. p. 691. The Influence of Stimulants and Narcotics on Health. *The Book of Health:* Cassell & Co.

It is impossible to lay down a rule for the quantity necessary, for this will vary not only with every individual, but with the individual at different times. The stimulant which is most generally useful is probably claret. With some persons sherry does well, but with others it is apt to cause acidity, a good deal of the difference being due to the kind of sherry, or so-called sherry, used. In the most severe cases of dyspepsia, brandy-and-water, or whisky-and-water, usually agree better than wines of any sort.

The methods we have considered hitherto in regard to the treatment of dyspepsia have had reference to the increase of assimilation, to the way by which we may put more fuel on the furnace of life; but the methods we have now to consider are—how are we to remove the ashes, the products of waste which would choke the fire and extinguish the life? The combustion necessary to functional activity takes place in the organs themselves, and not in the intestines, and it might be more correct to consider tissue-change, and the action of drugs upon it, before we discuss the drugs which act on the intestine; but, from another point of view, the latter is, perhaps, the more convenient.

The next class of drugs acting on the intestinal canal which we will take up is that of purgatives (p. 188).

It is evident that a regular action of the bowels is important, not only by removing the indigestible residue of food, and thus preventing fæcal accumulation, but by getting rid of some injurious products which have been formed during the process of digestion. It seems strange that one so frequently finds headache as the result of slight constipation, lasting perhaps only a few hours; whereas, in constipation lasting for weeks, it may be entirely absent. This observation seems to me to afford additional support to the hypothesis I have advanced, that headache is due, in part at least, to poisonous products formed in the intestine and absorbed from it, for Brieger noticed that it was only in the first stages of albuminous decomposition that alkaloids were formed, and afterwards these seemed to disappear. In constipation, it seems not unlikely that poisonous substances are first formed and absorbed, but that they afterwards become either decomposed or excreted by other channels, and thus the effect which they at first produced afterwards diminishes, or disappears entirely.

We sometimes find persons in whom movement of the bowels takes place at very long intervals, and I have met with several such cases. During the time I was Casualty Physician at St. Bartholomew's, I must have seen 100,000 patients, reckoning that I saw each patient on an average three times. At first, I was accustomed to ask the question, "Are your bowels regular?" but I afterwards gave this up, because I found it was ambiguous. One day, I asked this question of a young woman, and she answered, "Yes, sir." I then asked, "How often are they open?" and she replied, "Once in three weeks, sir." Her answer to my first question was perfectly correct, for her bowels were regular, but the term regularity conveyed a different meaning to her and to me. This was an exceptional case, but I met with a number whose bowels were open only once a fortnight. In one case, they were only open once in three months, and the patient objected to take any laxative medicine whatever, as this was her normal condition. Such cases of constipation, occurring without any marked injurious result, are generally due to the fact that the patients live almost entirely upon food which leaves little or no indigestible residue, and which contains no excess of nitrogen. Most of the cases which I have seen were in women who lived chiefly upon bread, butter, with a little tea, sugar, and milk, the greater part of which would be entirely digested and absorbed, passing off as carbonic acid from the lungs, and as urea by the kidneys. In most cases, however, especially among people who are better fed, constipation of this sort is likely to be followed by very injurious results.

Where the bowels are habitually constipated, a most useful thing is to give a small aloetic pill before the last food of the day, dinner or supper, as the case may be. This slightly increases the peristaltic movements of the stomach and intestines, which would naturally be induced by the food itself; and the use of such "dinner pills" may be continued for very many years together without the least impairment to the general health.

There are fashions in purgatives, as well as in anything else; and among the fashionable purgatives at present are the saline natural waters, or the salts obtained from them. These are best given the first thing in the morning, and should be either warmed or given along with warm water. When crystallised salts are used, such as Carlsbad salts, the quantity of water taken with them is of considerable importance. One-third to a half a tea-spoonful of the salts, in a large tumblerful of hot water, is usually sufficient to produce one loose motion immediately after breakfast; but a larger quantity of salts with a smaller quantity of water often causes abdominal disturbance, discomfort, or even pain, with several small motions at intervals throughout the day. Where evacuation of the bowels only is desired, the saline solution may be taken at a single draught; but when we wish it to act upon the liver, it should be taken in sips during dressing.

It is a matter of common observation that cases of hepatic disorder are benefited by a visit to Carlsbad, although Carlsbad salts or water have been productive of little benefit when used at home. But then they are used in very different ways at home and at the spring itself. In Carlsbad, the patient rises early in the morning, and promenades before breakfast, to the sound of music, for an hour, slowly sipping the water at intervals. I have already mentioned the powerful effect of sipping upon the heart, but it has also an effect upon the liver. It has been shown that water, slowly sipped, not only increases the amount of bile secreted, but causes it to be secreted under higher pressure, so that, if any slight obstruction should be present in the bile-ducts, it will be overcome, and the bile will flow freely into the bowel.[1]

It so happens that pharmacology, or the study of the action of drugs, takes us deeper into the secrets of the body than pure physiology or pathology; and I must now touch upon one cause of biliousness which I omitted before, namely, alteration in the condition of the bile itself. In a previous lecture, I discussed the effect on the vessels of the liver which might be produced by substances absorbed from the intestine; and I mentioned, in relation to it, the possible action of alkaloidal compounds formed in the intestine. I did not discuss the possible action of such compounds on the nature of the bile secreted, yet I believe this to be a very important condition indeed.

We observe two kinds of biliousness, or rather, perhaps, I ought to say, biliousness with two different conditions of biliary flow. In the one kind, the stools are clay-coloured, from the absence of bile; in the other, the stools are either normal, or are dark-coloured from excess of bile.

Now, certain bodies belonging to the aromatic series have a very remarkable action upon the secretion of bile. Salicylate of soda is a powerful hepatic stimulant, not only greatly increasing the quantity of bile, but rendering it much more watery than before. By thus liquefying the bile it may be useful in biliousness with increased viscosity of the bile, and also in cases where there is a tendency to the formation of gall-stones.

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[1] Zawilski, *Sitzungsber. d. Wiener Akad.*, 1877; *Mal. Nat. Abtg.*, Bd. iv. p. 73.

Other substances of the aromatic series, especially toluylendiamine, on the other hand, greatly increase the quantity of solids in the bile, and, indeed, do so to such an enormous extent that the bile becomes so thick and viscid that it will no longer flow through the biliary capillaries, and jaundice is the result. Before it has become so thick and viscid that it will not flow at all, a part of it may escape into the intestines, and give to the fæcal masses a very dark colour.

We do not yet know whether a similar action on the liver is exerted by substances—we may, perhaps, say poisons—formed during the process of digestion in the intestine. If such substances are formed, their formation might be consequent on something wrong in the food which had been taken, or on some disturbance of secretion or absorption, or might be due to foreign organisms having been taken into the intestinal canal, and having produced there abnormal decomposition. Every now and again we find a number of people living in the same house suffering from jaundice, without any cause that we can discover; but probably it is due to their having either partaken of injurious food, or having been exposed to injurious influences, especially to the ingestion of microzymes.

There can be no doubt that a blue pill and a black draught, or a few grains of calomel, have a most beneficial action, not only upon the stomach, where Dr. Beaumont was able to see the morbid changes disappear under their influence, but upon the body generally. The benefit thus obtained is usually ascribed to the cholagogue effect of the mercurial sweeping bile out from the body before time has been allowed for its reabsorption. Probably this is, to a great extent, the correct explanation, but recent researches render it not improbable that mercurials have another action, namely, an antiseptic one, in the intestinal canal, and that a good deal of the benefit derived from their use is really due to their preventing the formation of injurious products.

If the hypothesis I have advanced be correct, that the bile is sometimes rendered thick and viscid by the action of certain products of digestion upon the biliary secretion, we would naturally expect that anything which will assist the bile to flow through the ducts into the intestine will be beneficial. Now, Lord Palmerston very truly remarked that "the outside of a horse is the best thing for the inside of a man;" and a brisk ride in the morning is better for most people than any amount of mercurials or salts. It is not merely that the person gets exercise, for a constitutional walk will not have a similar effect. It is the kind of exercise, the liver being mechanically compressed, during riding, by the diaphragm on the one hand, and the abdominal muscles on the other, so that bile is actually squeezed out of it. Where riding exercise cannot be had, rowing, or even its imitation in the gymnasium, has a somewhat similar action; and when people are unable to get exercise at all, massage over the liver will tend to lessen the accumulation of bile within the ducts.

Closely connected with cholagogues and hepatic stimulants, is another important class of drugs, namely, alteratives (p. 223).

We are only beginning to have some vague idea of how drugs act which belong to this class. Nitrohydrochloric acid is a favourite remedy, and a very useful one in biliousness. We cannot yet say precisely how it acts, but it no doubt does affect the tissue change in the liver. The reason for supposing this is that acids—nitrohydrochloric acid among others—appear again in the urine in the form of ammoniacal salts, and the ammonia with which they are combined appears to be the representative of so much nitrogenous waste, which, instead of being converted into urea in the liver, has combined with the acid, and been excreted as ammonia. This indicates that acids act upon the liver, although, as I have just said, we do not yet understand their precise mode of action. Clinically, however, we find that nitrohydrochloric acid is exceedingly useful in persons who are troubled by eructations of sulphuretted hydrogen; and it not only removes the taste of rotten eggs which is so disagreeable, but lessens the depression of spirits which frequently accompanies this form of dyspepsia. It is also useful in oxaluria and depression of spirits, even when no disagreeable eructations are present. Ammonia also has a powerful action on the liver, and chloride of ammonium has been strongly recommended in hepatic disease. It is only within the last year or so that we have learned anything definite about the action of ammonia on the liver; but it has now been shown that some ammoniacal salts increase the formation of glycogen.[1] Our knowledge of alteratives, at present, consists only of a few isolated facts, but, before long, we may hope to have a more perfect understanding of their mode of action, and, consequently, be able to apply them more successfully in disease.

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[1] F. Röhmann, *Centralblatt f. klin. Medcin.*, 1884, No. 36.

Another class of remedies which are also useful in indigestion is diuretics. Although these have no very direct action on the intestinal canal itself, they not only alter tissue-change in the body, but affect the nervous system, through which the digestive processes are co-ordinated. In some cases of gouty dyspepsia, large quantities of hot water are exceedingly useful, both by relieving dyspepsia itself and by getting rid of any urinary irritation. The diuretic action may be increased by the addition of alkaline salts; and effervescent citrate or tartrate of potash is useful both as a diuretic and as a local sedative to the stomach in neurotic or gouty gastralgia.

By the frequent use of water as a diluent, either alone or with salines, the consequences of indigestion in regard to the lungs, heart, and head, may be often averted or remedied.

Asthma occurring in gouty subjects is, perhaps, best treated by a mixture of bromide and iodide of potassium; and the addition of a little arsenic is said to increase its effect.

In cases of intermittent pulse, bromide of potassium is frequently very useful, though one of the best remedies for it is one which I believe was prescribed by the late Dr. Warburton Begbie, and consisting of two grains of powdered rhubarb, ten of subnitrate of bismuth, one and a half of nux vomica, and three of compound cinnamon-powder. This should be taken before meals; and, if there is much acidity, ten grains of bicarbonate of soda, or of magnesia, may be added to it. It may be given either in water, or, what is, perhaps, pleasanter, wrapped in a wafer and swallowed along with a little water.

Giddiness, as I have said, frequently takes the place of headache in persons of middle age suffering from biliousness, and both headache and giddiness are frequently connected with disorders of vision.

The most common causes of headache, indeed, are decayed teeth and inequalities of vision. Where the teeth are decayed, rinsing the mouth out with a lotion of bicarbonate of soda, or applying a little cucaine to the exposed pulp, will relieve the headache, and especially if combined with the use of a saline purgative. In many so-called bilious headaches, the eyes, as I have mentioned, are very tense, and tender on pressure. Such headaches are not unfrequently relieved by the use of small doses of salicylate of soda, half a grain in an ounce of water being taken every quarter of an hour or half an hour. How this acts, it is impossible at present to say; for, though it possibly acts on the eyes themselves, its utility may also be due to its action upon the hepatic secretion (p. 74). Inequality of the visual power in the two eyes is an exceedingly common cause of headache; and I have sometimes found that a sick headache may be arrested, even after the well-known zigzags have become visible, by putting on a pair of spectacles which will equalise the eyes; or, perhaps even better, one which will compensate the weak eye, and throw the strain upon the other. Mr. Bendelack Hewetson[1] has succeeded in removing migraine by paralysing the power of accommodation by atropine.

In speaking of the disorders of digestion, I have left to the last one of the most important methods, and one which sometimes gives results little short of miraculous. This method was first introduced to the profession in America and England by Dr. Weir-Mitchell, in his book on *Fat and Blood, and How to Make Them*, but in this country it obtained little notice, until it was taken up by Dr. William Playfair. It consists essentially in passive exercises and abundant feeding. We all know how active exercise increases the appetite. Tissue-change goes on more rapidly in the organs, waste is more abundantly excreted, and more food is eagerly sought for. But there are many feeble flabby persons who cannot take exercise, or if they can, will not. Moreover, there are others who are quite willing to exercise the voluntary muscles of the limbs, but cannot exercise the involuntary muscles of their internal organs. Now, treatment by massage helps both of these. It increases the nutrition, both of the voluntary muscles and of the internal organs; and under its use patients, apparently hopelessly incurable, completely recover. Dr. Playfair has had wonderful success with cases of hysterical women; but I have been most struck with the success of the treatment in the case of a man in whom all medical treatment had proved useless. This patient, whom I first saw about two years and a half ago, in consultation with Dr. Image, of Bury St. Edmunds, was a very tall, powerfully-built man, who had been accustomed to outdoor life, and much active exercise. He had at one time suffered from asthma, but this had left him, and he became liable to attacks of pain and vomiting. I was inclined to look upon the case as one of neurotic dyspepsia, but other physicians, who had been consulted, both in this country and on the continent, regarded it as tubercular peritonitis. For two years he continued to become more and more emaciated, until at length he was reduced to the appearance of a living skeleton. Only once in

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[1] Bendelack Hewetson.—The Relation between Sick Headaches and Defective Sight.—*Pamphlet.* Leeds, 1885.

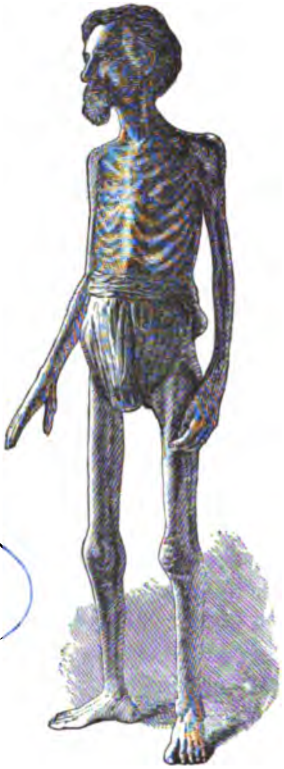

Fig. 7.—This figure, which is taken from a photograph kindly given to me by the patient for the purpose of engraving, shows his condition before Dr. Playfair begun to treat him by massage.

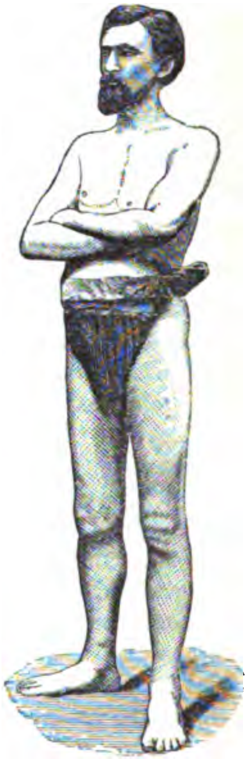

Fig. 8.—This figure, also taken from a photograph, shows the patient's condition after massage.

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my life do I remember seeing a man so thin, and that was a person who was exhibited in a show. Dr. Playfair was at first doubtful about undertaking the case; but as Dr. Image and I were anxious that he should do so, he kindly agreed, and in the course of eight weeks our patient was a different man. Under the use of massage and forced feeding, his muscles enlarged, until now he might perfectly well join a Highland regiment, and wear a kilt, without being ashamed. His muscles, which had almost entirely disappeared, have not only become of a normal size, but they are as hard as pieces of wood; and from being a simple skeleton, he is now a well-developed man.[1]

From the hasty sketch that I have given of the disorders of digestion, their consequences and treatment, in these lectures, it will, I think, appear that, although our knowledge of the subject is still very imperfect, a large number of observations have been accumulated, which we may hope will, before long, enable us to understand the pathology more fully, and treat these disorders more perfectly.

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[1] This patient wrote me a letter regarding massage, which is so important that I quote it. He says, "Will you allow me (as one who *knows*, having undergone the whole thing) to *very strongly* recommend you not to attempt *any* case without *insisting on isolation*. *This is of the utmost importance.* Do not attempt half measures or you will find the case will fail, and you will become disheartened. Even in my own case, though I was most anxious to get well, I feel sure it would not have succeeded had I tried it at home." Notwithstanding this advice I have tried half measures, and have found my patient's prediction verified by the failure of these attempts.

MISCELLANEOUS ESSAYS.

ON HEADACHE, NEURALGIA,

AND OTHER NERVOUS DISEASES

CONNECTED WITH THE TEETH.

(*Transactions of the Odontological Society of Great Britain*, 1880.)

THE pain of toothache localised in a decayed tooth is unfortunately so common that every sufferer diagnoses it for himself, and although it may be reckoned amongst the nervous disorders connected with the teeth, I need not say anything about it.

But toothache may be associated with other pains, or may even be replaced by them, and then the diagnosis is by no means so easy. The true cause of the pain may, indeed, remain unsuspected even by competent medical men, and their treatment may consequently be comparatively ineffectual. My attention was first drawn to the connection between decayed teeth and nervous disorders having little or no apparent relation to them by an incident which occurred a good many years ago, when I was a student. I had just heard that one of the best means of relieving toothache was to insert a pledget of cotton-wool, dipped in melted carbolic acid, into the cavity of the aching tooth, care being, of course, taken to squeeze out the superfluous acid, and to cover the pledget with some clean wool, so as to protect the tongue. I was very anxious to test the information I had received, and shortly afterwards an opportunity presented itself. A maid-servant had complained for some days of headache in the left temple of a severe neuralgic character, and associated with this was a certain amount of toothache, which was, however, less complained of than the headache. I plugged the offending tooth with cotton-wool dipped in melted carbolic acid, but was greatly disappointed to find that it produced little or no apparent benefit. In less than half-an-hour, however, the girl informed me that the pain in the temple and the toothache were both entirely gone. Their disappearance was not due to the carbolic acid having required time to exert its action, but to its having been applied to a different point. The girl had taken it out of the cavity of the decayed molar into which I put it at first, and transferred it to another tooth, of which she had not complained, and which I had not suspected. Immediately the pain disappeared, both from the tooth and the temple.

In this case pain was felt in the tooth as well as the head, and the headache might be looked upon as simply irradiation of the pain from the tooth. But that headaches may occasionally depend upon caries of teeth in which no pain whatever is felt, is, I think, shown by what once happened in my own case. I had been suffering from migraine, the pain being limited to a spot in the left temple. There was tenderness on pressure on one spot, below and in front of, the parietal eminence. On several occasions I had noticed that the left eyeball was tender on pressure; but one day I was suffering from headache, and yet found that the eyeball was not tender. I pressed my finger all over my face in the endeavour to find a second tender spot, and at last I found one under the angle of the jaw. But the tenderness here was due to a small gland, which was hard and painful to the touch. Hardness, enlargement, and tenderness in a gland generally indicate more or less inflammation in it, and the most probable cause of such a condition is, of course, the irritation excited in the gland by foreign matter conveyed to it by the lymphatic vessels. I accordingly began to examine the mouth and teeth from which the lymphatic vessels proceeded to the gland in question. Nothing abnormal was to be noticed in the lips, cheeks, tongue, or gums, so I tested the teeth by percussion with a blunt steel point, and on the posterior aspect of the last molar on the left side of the lower jaw I found a spot which was very slightly tender. I accordingly went at once to a dentist, and learned that caries had just begun at that spot, but had not caused any cavity whatever. I had never suffered the least pain in the tooth, and but for the headache which led me to percuss the teeth systematically I should in all probability never have suspected the caries until it was far gone. The connection which was here found to exist between temporal headache and a decayed tooth is, I think, interesting, not only as showing a causal relation between the caries and the headache, but as helping to explain the pathology of migraine.

A good deal has been written on this subject, and there is a considerable diversity of opinion amongst different writers. Professor du Bois Reymond, who suffered a good deal from it, attributed it to spasm of the vessels, for he found that, during the pain, the temporal artery became tense and hard, like a piece of whip-cord, and the pupil of the eye on the affected side dilated as if the sympathetic in the neck had been irritated. Others have discarded this explanation, because they found that the vessels, instead of being firmly contracted, were distended widely, and throbbed violently, and they have attributed the pain in the head to the congestion of the vessels.

These two explanations of the pain of migraine, the one attributing it to anæmia, and the other to congestion, are apparently irreconcilable. My own case gives, however, I think, an explanation of the discrepancy. Both statements are correct, but both are incomplete, and the reason is that their authors have only observed the arteries during a part of their course, instead of tracing them backwards to the large trunks from which they sprang, and onwards to their smaller ramifications. In my own case, I have found that on some occasions the temporal artery was hard and contracted, like a piece of whip-cord, as described by du Bois Reymond. On others I found the temporal artery widely dilated and pulsating violently, and yet I could distinguish no difference between the pain I felt on these different occasions. So, not contented with noting the condition of the temporal artery only at its middle, I followed it onwards to its smaller branches, and backwards to the carotid.

Then I found that a constant vascular condition existed during the headache, notwithstanding the apparent differences in the state of the temporal artery. This constant vascular condition consisted in dilatation of the artery at its proximal, and spasmodic contraction at its distal, extremity. The carotid artery was almost invariably dilated and throbbing. Sometimes the dilatation would extend as far as the trunk of the temporal artery, but sometimes the temporal was contracted. Even when the temporal artery was dilated, if I only followed it to its smaller ramifications they were found to be firmly contracted and cord-like. If one may reason from this single instance, connecting as it does the examples of vascular dilatation and contraction given by other authors, we may say that the pain of migraine depends neither on contraction nor dilatation of the vessels *per se*, but upon dilatation of one part of the vessel with spasmodic contraction of another, or, if we might so term it, upon a state of colic in the vessels themselves. This irregular contraction of the vessel is almost certainly due to disordered vaso-motor innervation. The cause of this disorder is to be sought in the sympathetic system, and the observation of du Bois Reymond regarding the condition of the iris may lead us to connect it with the cervical ganglia. From these ganglia, vaso-motor fibres proceed along the carotid and its branches, and if we regard disorder of these ganglia as the cause of migraine we are at once in a position to explain some of the symptoms which occasionally accompany it. Thus, I have observed that sometimes the pain in the temple would suddenly cease, and be replaced by pain in the occipital region. Sometimes, also, we have affections of the sight, such as general dimness of vision, diplopia, and spectra—coloured or uncoloured. The transference of pain from the temple to the occipital region is probably caused by transference of the spasmodic contraction from the temporal to the occipital artery, and the disorders of the sense of sight we may reasonably regard as caused by alterations in the intercranial branches of the carotid, similar to those which we can detect by the finger in its temporal branch. The disturbance in the sympathetic system, which I regard as the cause of migraine, may not always have its origin in the teeth; it may, and very probably does, sometimes originate in the eyes, but in the instance which I have already noted as occurring in my own case, the irritation started from the lymphatic gland, on or about which branches of the sympathetic probably ramified. The tooth itself, although the real cause of the sympathetic irritation, did not produce it directly, but indirectly. From the root of the tooth the lymphatics conveyed irritating matter to the gland, and the irritation here excited acted in its turn as a disturber of the sympathetic nerves which furnish the vaso-motor supply to the carotid and its branches.

The connection between dental caries and neuralgia was first noticed by Neucourt,[1] and he gives rules for diagnosing a causal relation between caries and neuralgia. When the pain, which is at first widespread, gets localised, in the course of a few days, in the dental region, and is succeeded by redness, swelling, and tenderness on pressure of the gums, the neuralgia is almost certainly of dental origin. In these cases the patients are restless, and the pain is more or less constant, with no distinct intermissions; the pulse is more frequent and hard, and there is not unfrequently sweating. If the pain is followed by a gumboil, the tooth, he thinks, is certainly decayed, although it should present no appearance of caries, and this he considers to be also the case if the tooth appears longer than the others and is painful on percussion. Tenderness on percussion is considered by Richter[1] to be the most certain sign. The diagnosis may be assisted by noticing whether the neuralgia when disappearing lingers longest in one of the teeth.

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[1] F. Neucourt, *Arch. Gén.*, Juin, 1849.

The exact pathology of neuralgia has not yet been settled, but Valleix, one of the great authorities on the subject, gave as its distinctive points the presence of spots which were tender on pressure, and the effect of pressure in increasing the pain. These spots have been noticed by Neucourt[2] in neuralgia depending upon dental irritation, and he has also observed the absence of increased pain on pressure in true neuralgia, so that no distinction can be drawn between neuralgia due to dental irritation and neuralgia depending upon other causes.

Although the most frequent seat of pain due to carious teeth is the temporal region, yet, as one would expect, we find it also in parts of the neck. A few weeks ago I was consulted by a lady regarding her throat. She had pain opposite the upper part of the thyroid cartilage on the right side, and thought that she had inflammation at that point. Laryngoscopic examination showed the larynx to be perfectly healthy, but I found one of the molars on the same side as the painful spot to be extensively diseased. The pain from which she suffered, I have little doubt, was caused by the decayed tooth; but, as she refused to have it extracted or stopped, I could not absolutely verify my diagnosis. I put her upon a course of tonics and the pain almost completely disappeared.

This would be said by some to prove my diagnosis to be wrong; for if the pain depended on the presence of a carious tooth, how could it disappear while the tooth remained unattended to? But we must always remember that the actions which take place in the animal body are not so simple as those which occur in the test-tube of a chemist. Yet even in the test-tube we require more than one reagent to produce a reaction; and if one of the substances or conditions necessary for the reaction be absent, it does not occur, even though other conditions be present. In the same way we know that a decayed tooth does not always cause toothache, and that toothache, when present, may frequently be removed by the use of a saline purgative. The tooth still remains as a source of irritation, but the state of the nervous system has been so altered by the purgative, that pain is no longer produced by the irritation. In the same way we may not unfrequently relieve the neuralgia originating from decayed teeth by a judicious course of aperients and tonics. This is so far advantageous to the patient, as it relieves him from pain; but it is, on the other hand, disadvantageous, inasmuch as it causes the medical man to overlook the real source of the evil, and allows the dental caries to proceed instead of having it arrested by suitable stopping. In the case I have just mentioned, the pain in the larynx, which I attributed to the decayed tooth, did not lead to any change in the nutrition or functions of the larynx. Pointis,[1] however, records a case in which, after severe toothache, the patient suddenly lost his voice, and the aphonia was followed by anorexia, cough, wasting, and feverishness, which led to the belief that he was suffering from laryngeal phthisis. But the lungs were sound, and there was no tenderness over the larynx. There was slight inflammation of the pharynx, all the molars on the left underjaw were decayed, and the gums and periosteum around them were swelled. The teeth were removed, the gums cauterised, and gargles employed. On the very day the teeth were extracted, the suffocative spasms which had troubled the patient abated, and on the following days the other symptoms quickly disappeared.

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[1] Richter, Schmidt's *Jahrbücher*, 1850-4, xv. p. 46.

[2] F. Neucourt, *Arch. Gén.*, Oct. to Dec., 1853; Jan., 1854.

The irritation caused to the larynx by the process of dentition is well recognised, and has led to the employment of the term teething-cough. The existence of a real causal connection between cough and teething has been doubted; but there are cases on record which seem to show that this really does exist. One very marked instance of this sort has been recorded by Paasch.[2] A child, four months old, had a paroxysmal laryngeal cough, during which it was nearly suffocated, opening its mouth and throwing the head back. Narcotics were of no use. The gum of the lower jaw was swelled, and vesicular swellings appeared at the part of the gums corresponding to the middle incisors. These increased in size and became dark, livid, translucent, and fluctuating.

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[1] Pointis, *Journ. des Conn. Méd. Prat.*, Sept., 1846.

[2] Paasch, *Journ. of Kinderkr.*, 3, 4, 1856.

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During their growth, the cough increased; but when the right incisor came through the gum, and one vesicular swelling broke, the cough ceased. After twenty-four hours it again began, though less violent than before. After some days the second incisor came through, the second vesicle burst, the cough at once began to disappear, and at the end of two days had entirely and for ever gone.

From the close connection that exists between the throat and the ear we would expect deafness to be not unfrequently the consequence of dental irritation. It seems, however, not to be very frequent, although it does exist, as shown by the following case recorded by Koecker.[1] A man, aged forty-eight, suffered from suddenly-increasing deafness; but after his teeth, which were carious, and had caused suppuration of the gums, were extracted, he completely regained his hearing.

The eye is much more frequently affected than the ear, and blindness is by no means an uncommon result of dental decay. Mr. Jonathan Hutchinson has recorded some cases of this, and he regards the blindness as reflex, and analogous in its causation to essential paralysis of children. The sight is suddenly lost, but there are no cerebral symptoms. The optic nerve is sometimes atrophied, but sometimes not. The blindness is generally preceded for a long time by facial neuralgia, associated with toothache. A more striking case than any of Mr. Hutchinson's is recorded by Dr. De Witt.[2] A perfectly healthy man, aged thirty-one, suddenly noticed, in attempting to fire off a gun, that his right eye was completely blind. He had neither pain nor subjective appearances of light in the eye. He was able to distinguish light from darkness with it, but nothing more. No cause for this blindness could be discovered until twelve years afterwards, when it was found that the patient had several teeth stopped two months before his blindness. For a long time afterwards he suffered from pain and tenderness in the first molar of the right side. The gums swelled and ulcerated, and frequent abscesses formed, which he opened with his knife. The stopping was at length removed from the tooth, and this at once relieved the irritation of the gums, and increased the power of sight. In three weeks, however, when the sight had already become considerably better, the gums again ulcerated, and the sight became immediately worse. The decayed tooth was then extracted, and the sight became permanently improved, although it never became quite so good as that of the other eye.

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[1] Koecker, *Med. Chir. Rev.*, Jan., 1843.

[2] De Witt, *American Journ.*, *N.S.*, cx., p. 382, April, 1868.

The connection between the teeth and the sight has been long popularly recognised in the name of "eye-teeth" given to the canines, and this seems to depend on no popular superstition, but on a real scientific fact. It is believed by many that the extraction or decay of a canine leads to loss of sight, or inflammation in the corresponding eye, and the physiological experiments of Magendie and Schiff substantiate this belief.

Magendie divided the inferior maxillary branch of the fifth, and Schiff divided the lingual and inferior dental branches without injury to the ophthalmic branches.[1] The dimness of vision pro-

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[1] In his work on Physiology and Pathology, Schiff says: "Magendie, in 1838, showed, in one of his lectures, a small dog, in which he had divided the inferior maxillary branch of the fifth nerve some time previously. Hitherto," he said, "only those parts were affected to which the branch was distributed; but in the present instance disturbances of the visual power had appeared some days ago. There was no such opacity as that which follows section of the fifth pair of nerves in the skull, but only a little cloudiness between the lamellæ of the cornea. Their transparency was not completely lost, but there was a condition intermediate between complete transparency and commencing opacity. It appeared to him, also, that the sensibility of the eyes was somewhat altered. When engaged in another research, I have divided, in a number of dogs, sometimes the lingual branch alone, and sometimes the inferior dental branch, high up at the point where it branches off from the inferior maxillary nerve. Since here the nerve was exposed and divided outside the skull, neither injury nor compression of the ophthalmic branch is to be thought of. No doubt, by my method of operation, traction was exerted on the inferior maxillary branch which was seized by the forceps; but the traction was exerted rather against the periphery than the centre, the dental branch being partly drawn out of its canal in the lower jaw. In most of the animals operated on, nothing remarkable was to be seen, but in about a third of them (four out of eleven) an affection of the corresponding eye appeared from four to eight days after the operation, without my being able to discover any reason for this peculiarity in the way in which the operation had been performed. The conjunctiva became injected, and the injection went on increasing for two or three days, but never became so great as it does after division of the trigeminus. The eye was moist, and covered with a thin layer of the same mucus which is secreted so abundantly after paralysis of the ophthalmic nerve. The cornea did not become opaque, but exhibited a partial greyish dimness, which extended from the centre in irregular form, to a varying extent, sometimes towards the upper and sometimes towards the under edge. The eye exhibited no perceptible diminution of sensibility; the pupil remained perfectly mobile, and exhibited all the usual synergetic contractions on movement of the eyeball.

"The dimness of the cornea increased for a short time, and in about twelve days from its commencement it disappeared completely, leaving the eye perfectly normal. During all this time the animals were perfectly lively, and their general condition underwent no change.

"On what do these peculiar phenomena depend? Certainly on the weakening of the vaso-motor nerves in the district supplied by the ophthalmic nerve. But, as this nerve duced by these experiments is referred by Schiff to disturbance of the vaso-motor supply to the eye, consequent upon a partial paralysis of the ophthalmic branch of the fifth; but as this nerve itself was not injured in the experiment, it is evident that the vascular alterations are of reflex origin, the irritation having been conveyed from the site of the wound to the nerve centres, and having there exerted such an influence upon them as to induce vascular changes in the eye.

The eyelid may also be affected reflexly from the teeth. Sometimes dental irritation may cause motor spasm, and at other times paralysis. A year or two ago I had the stump of a bicuspid tooth extracted from the right upper jaw. Almost immediately after the extraction I noticed a constant spasmodic twitching in the right eyelid, which I was utterly unable to restrain. This lasted all the time the wound in the gum caused by the extraction of the stump was

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itself was not touched, some pathological process must needs have been propagated from the wound of the third branch towards the centre, and there have extended over the original district of that branch. This very general conclusion appears to me well-grounded; for I cannot believe that in these cases the hyperæmia of the eye on the side operated upon was due to chance, for this affection of the eye never occurred in any one of the numerous dogs which I kept under observation after other operations. The ophthalmic nerve here was not paralysed, for the phenomena were not very intense, and the sensitiveness of the eye had not suffered.

"The explanation of this was all the more obscure, as I had previously convinced myself that no pathological changes could be discovered by the microscope in the central end of the divided nerve. Besides, I had performed the same operation on the third branch of the trigeminus in a great number of cats, and no affection of the eye occurred in them. I therefore utilised the opportunity of studying more carefully the anatomical changes which are associated with this transitory condition, which was afforded me in 1852 by two young dogs, which exhibited this dimness of the cornea after resection of the inferior dental nerve. The dogs were killed from six to ten days after resection of the nerve. The swelling and alteration of the divided end of the nerve were no greater than is usually the case after such resections. There was, as usual, an exudation of nucleated globules between the nerve-bundles in the neighbourhood of the wound. Neither the inferior maxillary, higher up, nor the ophthalmic, exhibited anything abnormal under the microscope. A slight redness of the coverings of the nerve immediately below the exit of the third branch from the cranium could only be regarded as accidental, and perhaps due to the traction on the nerve trunk during the operation—and all the more as this redness was greater in the animal killed on the sixth day after the resection, and in which the dimness of the eye was less than in the dog killed on the tenth day. In both animals, it appeared to me that within the cranium the arachnoid covering the pons on the operated side, as well as the pons itself at the root of the fifth nerve, were more injected than on the corresponding parts of the other side. But any one who knows how inconstant and variable is the amount of blood inside the cranium will excuse me when I state this with considerable reserve. Both animals were killed with strychnine."—Schiff, *Untersuchungen zur Physiologie des Nervensystems mit Berücksichtigung der Pathologie.* Frankfort, 1855, p. 112.

open, but it ceased as soon as the gum had healed, and has never since returned. A case is recorded by Gaine[1] in which a carious tooth of the upper jaw had caused an abscess in the antrum. The right upper lid was paralysed, the pupil dilated, and there was no reaction. The optic nerve was pale, and the eye blind. On extraction of the tooth and puncture of the antrum the paralysis of the lid disappeared, although the eye did not regain sight.

Spasmodic contraction of the masseters is another consequence of dental irritation. A few weeks ago a gentleman, over forty years of age, called upon me and told me that he was much concerned about a spasmodic affection of the jaw from which he was suffering. He was, in fact, afraid of lock-jaw. He felt obliged to keep his mouth open, because it seemed to him that if he once shut it he would not be able to open it again. I did not recollect having read any description of this affection, but it seemed evident that it must depend either upon congestion of the cerebral centre for the movement of the jaw, which Ferrier locates at the lower end of the fissure of Rolando, or on reflex irritation from the mouth itself. The latter seemed to be much the more probable, and on looking into his mouth I saw that the teeth did not seem to be altogether in good order. I accordingly requested him to see a dentist, and, on inspection, the source of irritation was discovered to be a wisdom-tooth, which was just making its way through the gum, but in a somewhat oblique direction, so that its crown was pressed against the molar in front of it. On looking up the literature of the subject, I discovered that this affection was pretty fully described by Germain,[2] who recognised two causes of this form of trismus. The first is when the back molar is decayed, and a gumboil forms at its base, and the other is when the attachment of the masseter extends in front of the angle of the lower jaw, and the wisdom-tooth, in appearing, must break through its muscular and fibrous attachment. Colin[3] states that every year he sees at least one perfectly healthy individual become suddenly affected with spasmodic contraction of the masseters. There is no fever, but the contraction is so strong that only fluid nourishment can be taken. The contraction can be felt by running the finger over the masseter muscle. It gradually disappears in about eight or fourteen days. Little treatment is required except attention to the bowels, and possibly, if the contraction be very severe, an injection of atropia into the muscular substance itself might be of service.

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[1] Gaine, *Brit. Med. Journ.*, Dec. 30th, 1865.

[2] Germain, *Gaz. Hebd.*, 1863, x. 7.

[3] Colin, *Études Cliniques de Médecine Militaire.*

We have already noticed paralysis of the eyelid as a consequence of dental irritation, and we have also discussed the pathology of temporal and occipital headache in relation to caries of the teeth. Sometimes, however, paralysis occurs of a much more extensive character, in consequence of dental irritation, especially in children. Teething is recognised by Romberg and Henoch as a frequent cause of paralysis appearing in children without any apparent cause.[1] According to Fliess,[2] paralysis of this sort occurs more commonly during the period of the second dentition, whereas convulsions generally occur during the first. Its onset is sudden. The child is apparently in good health, but at night it sleeps restlessly, and is a little feverish. Next morning the arm, or more rarely the leg, is paralysed. The arm drops; it is warm but swollen, and of a reddish-blue colour. It is quite immovable, but the child suffers little or no pain. Not unfrequently paralysis is preceded by choreic movements. Sometimes recovery is rapid, but at other times the limb atrophies, and the paralysis may become associated with symptoms indicating more extensive disturbance of the spinal cord and brain, such as difficulty of breathing, asthma, palpitation, distortion of the face, and squint, ending in coma and death.

It is only in very rare instances that we are able to gain any insight into the pathological anatomy of such cases, because they rarely prove fatal, and even when they do so the secondary changes are generally so considerable as to leave one in doubt as to the exact mode of commencement. This renders all the more valuable the case recorded by Fliess, in which a boy five years old, and apparently quite healthy, found his left arm completely paralysed on awaking one morning after a restless night. The arm was red, but the boy suffered no pain, and played about without paying much attention to the arm. The same day he fell from a waggon upon his head, and died in a few hours. Apart from the fracture of the skull, which caused his death, the anatomical appearances which were found were congestion of the spinal cord, and great reddening and congestion of the meninges, near the point of origin of the brachial nerves, where the veins were also much fuller than on the corresponding right side. There was no organic change perceptible, either in the spinal cord or in the brachial nerves. On the other hand, the turgescence of the veins extended from the shoulder and neck up to the face, and was very striking in the sub-maxillary region.

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[1] *Klinische Wahrnehmungen und Beobachtungen.*

[2] Fliess, *Journ. der Kinderkr.*, 1849, July and August.

This vascular congestion seems to point to vaso-motor disturbance of a somewhat similar kind to that which we have already noticed in connection with occipital headache, or with migraine accompanied by subjective appearances of either form or colour.

Dental irritation may give rise to choreic movements, occurring as the prodromata of paralysis or to chorea alone. This irritation may depend, according to Levick,[1] either upon the second dentition, or upon dental caries, and the causal connection between the irritation and chorea is shown by the fact of its disappearing when the tooth pierces the gum, or when the carious teeth are extracted.

According to Russell Reynolds,[2] the second dentition is also a cause of epilepsy, and he has observed that those who are affected by it have often suffered from convulsions during the first dentition. A case is recorded by Albrecht[3] of a boy, aged twelve, who suffered daily for twelve months from general convulsions, which began in the temporal region and extended to the external auditory meatus. There was no decay in this instance, but the teeth were large, and the last molar on the right side had its crown jammed into the ascending ramus of the jaw. As soon as it was extracted the pain ceased, and the convulsions did not return. Another case is given by Mr. Castle[4] of a young man, aged nineteen, who had complained for four years of headache and pain in the eyes, stiff-neck, swelling, and numbness of the right arm. For the latter two years he suffered from general convulsions, which came on every two or three days, ending with vomiting, and often succeeded by partial deafness. All treatment was useless, and setons and blisters to the neck did no good. Nearly all the teeth were decayed; nine were extracted, and almost all of them had matter at their roots. A gargle was given, with five grains of iodide of mercury twice a day, and a purgative twice a week. After the extraction of the teeth the fits entirely disappeared.

In a case recorded by Lederer,[4] the second left upper incisor was replaced in a young girl by an artificial tooth. Shortly afterwards she became ill, vomited everything, and suffered from convulsions. No remedy succeeded until the tooth was removed and shortened. Immediately all the symptoms from which she had suffered disappeared.

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[1] Levick, *Amer. Journ. of Med. Sciences*, Jan., 1862, p. 40.

[2] Russell Reynolds's *Lancet*, July, 1848.

[3] Albrecht, Casper's *Wochenschr.*, 1837.

[4] Castle, *Lancet*, Jan., 1848.

[5] Lederer, *Wein. Med. Presse*, vii. 24, 1866.

Affections of the intestinal tract depending on dental irritation are of very considerable importance indeed.

In adults many a case of dyspepsia is due to defective teeth. It may be partly caused by reflex affection of the secretory and motor nerves of the stomach and intestines, but partly also, without doubt, by the imperfect mastication of the food, which is swallowed without being broken up on account of the pain or inconvenience which the act of mastication causes. In this way two evils are occasioned. First of all, the shortened sojourn of the food in the mouth allows no time for the secretion of saliva. From want of this the starchy constituents of the food are imperfectly digested; and, moreover, deficiency of saliva also lessens the normal stimulus to the secretion of the gastric juice; for alkaline fluids, like saliva, stimulate the secretion from the stomach, and deficiency of saliva is accordingly followed by a deficiency of the gastric juice. But, secondly, imperfect mastication has a mechanical action in preventing perfect digestion, for the food, being swallowed in lumps, is not permeated by the digestive fluids, and thus cannot be dissolved in anything like the same period of time that it would otherwise be.

The diarrhœa which comes on in children during dentition is well known, and is probably of a reflex character. It is probably produced through the gastric and intestinal branches of the vagus, and other branches of this nerve may be affected reflexly from the teeth.

The close connection between the roots of the fifth nerve, and those of the vagus, can be demonstrated anatomically, and it is probably in consequence of this that irritation of the fifth is able to exert such a powerful influence upon the circulation. Some time ago, in a paper which I published in the *British Medical Journal*,[1] I mentioned that one cause of death during the extraction of teeth under chloroform was probably the stoppage of the heart's action through the inhibitory fibres of the vagus, associated with a reflex depression of tone in the blood-vessels. The reason why the extraction of a tooth in a person who is not under the influence of an anæsthetic, is followed by no ill effects, is probably this:

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[1] *Brit. Med. Journ.*, Dec. 4th, 1875.

that in him the irritation of the fifth nerve produces two distinct actions which counterbalance each other. It may cause reflex stoppage of the heart through the vagus; but at the same time it causes reflex contraction of the vessels through the vaso-motor centre. This contraction of the vessels maintains the pressure in the arterial system during the stoppage of the heart, and thus no harm whatever is done. When an anæsthetic is used, however, one of these pieces of nervous mechanism may be paralysed by it, while the other is not, and thus the extraction of the tooth may stop the heart without causing contraction of the vessels. The blood-pressure will then sink very rapidly in the arterial system, and fatal syncope may be produced. If, however, the anæsthetic be pushed to a greater extent, so that both parts of the nervous mechanism just mentioned are paralysed, the vessels are not contracted, but neither is the heart stopped. The operation is therefore comparatively free from danger when no anæsthetic has been given, or when the anæsthesia is perfectly complete, the period of danger being that of imperfect anæsthesia.

We have now seen how affections of sensation, of motion, and of nutrition may all be dependent upon dental irritation, but even the cerebral faculties themselves may also suffer from a similar cause. One or two very interesting cases of this sort are recorded by Dr. Savage in the *Practitioner* for June, 1876. The first of these was that of a farmer, aged twenty-two, with a strong family tendency to insanity. In May, 1875, he suddenly took to riding madly about the country without his coat and waistcoat. From May until November he was exceedingly noisy, destructive, untidy, almost constantly excited, and if for a day or two he was exhausted, he was sullen and more dangerous. In the middle of November he complained of very severe toothache that caused him to be sleepless. He bore this for two or three days, after which the stump was removed. There was suppuration at the root of the fang. From the time that the stump was extracted the patient steadily improved, and by the middle of December was quite well. Another case was that of a woman, aged thirty-four, who had a brother insane, and had herself been intemperate. She was admitted in September, 1875, suffering from acute mania. She was noisy, violent, and obscene. She continued to be so until January 20th, 1876, when she complained of great pain, with swelling, and redness of her right lower maxilla. She had some bad teeth, but did not complain of toothache. The pain and swelling increased, and at the same time she became quiet and reasonable. She said she could not remember much of her state of excitement. The swelling of her face subsided, and she remained quite well. This case, however, was not so convincing as the first one recorded, because here there was a second possible cause of recovery, as she was pregnant, and said she felt quickening about ten days before her recovery. The recovery, however, was coincident with the pain and swelling of the face, and seemed, rather than the quickening, to be the cause of recovery.

ON THE PATHOLOGY AND TREATMENT OF SOME FORMS OF HEADACHE.

(*St. Bartholomew's Hospital Reports*, VOL. XIX.)

OF all the kinds of pain which afflict humanity, or at least civilised humanity, there is perhaps none which causes a greater amount of misery than headache. Although the pain of it may not unfrequently be slight, yet the number of people affected by it, the frequency of its recurrence, and the intensity which it sometimes attains, raises the total amount of pain produced by it to such an extent, that the means of relieving or curing it becomes a most important therapeutical question. We all know that the part of the nervous system by which sensations either of pleasure or pain are perceived is in the brain; for if communication between the head and the body or its parts is destroyed by section of a nerve or of the spinal cord, the individual is totally unconscious of any impressions made upon the periphery. The exact seat of sensation has been further localised by my friend Dr. Ferrier, who has ascertained that the destruction of the hippocampal convolutions on the one side of the brain produces anæsthesia of the opposite side of the body, so that neither pinching nor touching with a hot iron gives rise to any evidence of sensation. We may therefore look upon the hippocampal convolution as the seat of sensation, at least for the surface of the body, whatever may be the seat of sensation for internal organs.

In a condition of health the sensory centres in the brain perceive no pain unless some injury is happening to a part of the body, and pain is thus a useful monitor, warning the individual to stop the mischief which is occurring before it be too late. In certain unhealthy conditions of the brain, however, the sensory centres in the brain may be so affected that pain is felt although no injurious process whatever is occurring in any part of the body. Such a condition is probably the explanation of what we find in hysteria, when such intense pain may be felt in a joint, for example, as to induce the patient to insist upon the amputation of a perfectly healthy limb. In such a case as this the disease appears to be due entirely to alterations in the sensory centres in the brain, while the whole body appears to be healthy. I say *appears*, because, even in such cases, it is possible, and indeed probable, that some morbid condition may be present which has escaped our notice, because there may have been little or nothing to direct our attention to it as the cause of the disease. But the sensory centres in the brain are securely lodged within the skull, and are not likely to undergo any morbid change unless it is started either by alterations in the quality or quantity of the blood circulating through them, or by impressions conveyed to them by afferent nerves. We find, as a rule, in the healthy body, that irritation of any part is felt in the place to which the irritant is applied, so that attention is consequently at once directed to it, and an effort made for its removal; but this is not always the case, for even in the healthy body we find it is sometimes difficult to localise an impression. Perhaps no better instance of this can be given than the bite of a flea, which is sometimes felt two or three inches from the real seat of irritation. In abnormal conditions this reference of irritation to a spot where no irritant is present may be greatly increased. In the case of hysterical pain in the knee-joint, to which I have already referred, the source of irritation is not in the knee, but is probably, to a considerable extent at least, in the sexual organs, from which afferent impulses proceed to the brain, and there induce morbid changes which are probably similar in kind to those which would have been caused by acute irritation in the knee-joint; pain is thus felt by the individual, and referred to the knee although the joint itself is perhaps healthy. When such a pain as this is felt by persons presenting certain general characteristics, we call it hysterical, but in its essentials it is simply neuralgic. The term neuralgia is a very convenient cloak for our ignorance, and we apply it as a rule to all acute pains for which we can find no apparent cause. A good deal of discussion has arisen regarding the nature of neuralgia, and several writers hold that neuralgic pain is of central origin. According to this view, we may look upon hysterical pain in the knee-joint as a most marked and typical neuralgic affection. This view is probably the true one so far as it goes, but it is imperfect, and will, I think, mislead us if we do not try to find out in all cases the peripheral origin of the central changes, for in minor neuralgias, as in the case of hysterical knee-joint, the changes in the brain are probably started by some irritation of sensory peripheral nerves. Thus pain in the temple is very frequently due to the irritation of a decayed tooth. Sometimes a pain may be felt in the tooth as well as in the temple, just as in the ordinary experiment on the so-called funny bone, pain or tingling may be felt at the elbow where the ulnar nerve is twitched as well as in the fingers to which its terminal branches are distributed. Sometimes, however, this is not the case, and the pain is felt in the temple without any in the teeth. My attention was first directed to the relation between pain in the temple and decayed teeth many years ago. A servant of my brother's was suffering from toothache, but complained still more of intense pain in the temple. I did not know what to do for the pain in the temple, but thought the toothache might be relieved by applying solid carbolic acid on a pledget of cotton wool. I accordingly introduced this into a large cavity in one molar. To my great disappointment it gave no relief whatever. In the course of a very few minutes, however, her fellow-servants came running to tell me that cook was now quite free from pain; that she had taken the cotton wool out of the tooth into which I had put it and placed it in another decayed tooth, and at once the pain vanished both from the tooth and the temple. In this case the irritation of a decayed tooth had produced a twofold pain—a pain felt in the tooth itself, and also one felt in the temple; but sometimes a decayed tooth will cause headache when no pain is felt in the tooth itself. I was first led to observe this by watching my own case. One day I was suffering from severe megrim, the pain being limited to the left temple; there was tenderness on pressure over the spot. On many other occasions I had noticed that the eyeball was tender at the same time, but on that occasion there was no tenderness of the eyeball. Passing my finger over the side of the head and face in the endeavour to find a second tender spot, I at last came upon one under the angle of the jaw. The tenderness here was due to a small gland, which was hard and painful to the touch. The occurrence of an enlarged gland at once led me to seek for the source of irritation in a district from which it received the lymphatic vessels, and I accordingly examined the mucous membrane of the mouth and tongue, but without seeing anything abnormal. I then took a steel point, with which I probed and percussed all my teeth in succession. Every one was sound excepting the last molar on the same side as the headache, and on the posterior aspect of this there was a point, tender on pressure, although no cavity could be found. I went to a dentist as soon as possible afterwards, and he informed me that caries was just beginning at the spot which I had thus discovered. Some time ago a clergyman of my own acquaintance began to suffer from headache so intense as completely to incapacitate him. After taking various medicines in vain, he went for a Continental tour, but came back little benefited, and as soon as he resumed work the headache was as bad as ever. Shortly after his return I saw him, and remembering my own experience, I suspected his teeth. On looking into his mouth, however, I could see nothing; all his teeth seemed to be perfect. I then took a steel bodkin and probed and percussed each tooth in succession. At last I came to one which was tender. I advised him to see a dentist about it. This he accordingly did, and the tooth was found to be carious. It was at once properly stopped and the headaches disappeared. So frequently are headaches dependent upon decayed teeth, that in all cases of headache the first thing I do is carefully to examine the teeth. Not unfrequently when I have pointed to a decayed molar as the origin of the headache, the patient has said, "But I have no pain in the tooth;" and to this I usually answer, "It is quite natural. You get the toothache in another part of your head."

The question now arises, what is the cause of the pain felt in some other part of the head instead of the seat of irritation, but originating in some local irritation like that of a decayed tooth? Is it only due to changes in the centre for sensation in the brain, or to alterations in the periphery, or to both? I am inclined to believe that while it may sometimes be due to changes in the centre for sensation in the brain only, as in the case of hysterical pains, yet sometimes functional peripheral changes either accompany these central changes, or may of themselves give rise to the pain. In this latter case the peripheral alterations are probably produced through the medium of the sympathetic system. Thus I have noticed that the scalp, over the place where the pain is felt in headache depending on a decayed tooth, becomes tender on pressure while the pain lasts. This tenderness, however, is very transitory, and I have sometimes felt the headache and accompanying tenderness disappear from one part of the head and appear in another with great rapidity. The disappearance of the tenderness along with, or very shortly after, that of the pain, shows that there can be no structural alteration of any importance in the tender part. There may, however, be very important functional changes in blood-vessels of the painful part, and I think that headache is very frequently due to those changes; that, in fact, what we may regard as a kind of colic in the vessels occurs in the part, and this gives rise to the actual pain.

The mechanism of the headache here is that the irritation in a tooth, for example, acting through the vaso-motor nerves, causes vascular spasm, and this vascular spasm causes the pain of headache.

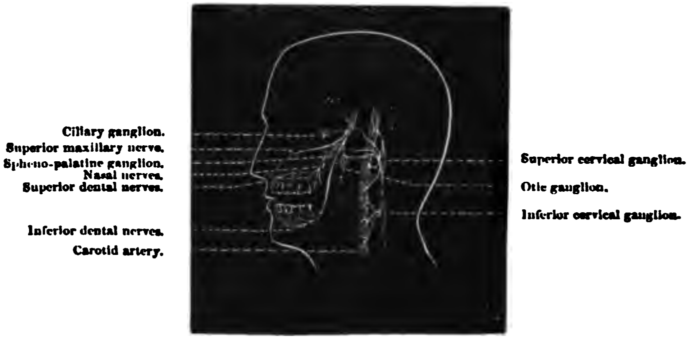

Fig. 9.—A very diagramatic representation of the connection between the branches of the fifth nerve and the sympathetic system, intended to indicate the nervous channels through which irritation of the fifth nerve may affect the vessels of the head.

In cases of headache and toothache combined, the headache may be simply due to changes in the centre for sensation in the brain, or these may be accompanied by spasm in the vessels of the head.

In cases of headache depending upon a decayed tooth, where no toothache is felt, it is not improbable that the irritation in the tooth does not give rise directly to the sensation of pain in the head, but does so by acting through the sympathetic system on the vessels so as to cause the spasm which leads to the sensation of pain. If this be so, we ought to be able to alleviate headache, not only by treating the tooth which is the original source of the evil, but also by such measures as will relieve the spasm of the vessels themselves, and this, I think, is shown to be the case in practice.

A great deal of discussion has taken place regarding the condition of the vessels in megrim. Du Bois-Reymond, who suffered much from it himself, attributed the pain to spasmodic contraction of the vessels, for he found that while the pain lasted his temporal artery on the same side became tense and hard like a bit of whipcord, and the pupil of the corresponding eye dilated, as if the sympathetic in the neck had been irritated. Others again have held, also on the ground of personal experience, that the arteries, instead of being contracted, were widely dilated. The reason of this discrepancy is simply, I think, that these observers have not examined the arteries throughout their length. In my own case I have sometimes found that during an attack of megrim the temporal artery on the affected side was hard like a bit of whipcord as described by Du Bois-Reymond, but that at other times, when no difference between the amount and kind of pain could be detected, it was widely dilated and pulsating violently. But on those occasions, if I traced it along its course, I found that while the trunk of the artery was dilated at the temples, its smaller branches as they passed on to the forehead were hard and contracted, and felt almost like pieces of wire under the skin. The carotid artery was also widely dilated and pulsating violently, as well as the temporal. The condition here then was a disturbance in the proper relation of the calibre of different parts of the same artery. The proximal end was abnormally dilated; the peripheral end was abnormally contracted. The same condition is present in those cases where the trunk of the temporal artery is contracted, for if the finger be carried backwards, the trunk of the carotid is felt to be dilated.

The only difference, then, between those cases of megrim in which the temporal artery is dilated and those in which it is felt to be contracted is a difference in the point of the artery at which the contraction takes place. The consequence of this disturbance in the relationship between different parts of the artery is that the blood, instead of being gradually regulated in its onward flow by the gentle action of a long artery, is suddenly checked by a local contraction, and the successive impulses produced by the jets of blood sent from the heart along the dilated arteries hammering upon this contracted point give rise to great pain. This pain can be at once relieved by compressing the carotid, so as to arrest the flow of blood through it; but unfortunately a feeling of undefinable distress is usually produced by this procedure, so that one can generally keep it up only for a few moments. It may sometimes be relieved for several minutes by gently pressing on the carotid, so as simply to diminish its flow without entirely arresting the circulation in it.

Heat and cold are two of the remedies used to lessen headache; sometimes one is useful, sometimes the other; and so far as I know, no explanation has hitherto been given of the reason why.

Fig. 10.—Tracings from the radial artery at the wrist: *A* before and *B* after the application of a cloth dipped in cold water round the arm. After Winternitz.

I believe it is simply this: That when heat is applied over the contracted peripheral vessels, it tends to relax them, and thus restores the equilibrium between the different portions of the artery; when cold is applied over the dilated vessels, it causes them to contract, and thus restores the equilibrium between them and the contracted peripheral parts.

The effect of the local application of heat and cold over the course of an artery has been well shown by Professor Winternitz of Vienna. I have seen him place a sphygmograph on the radial artery, take a tracing and then apply cloths dipped in ice-cold water around the arm; the consequence was, that the tracing of the radial artery at once became very much smaller from the contraction of the brachial. On this account cold compresses to the neck are sometimes very useful in headache.

Sometimes warmth to the throat may relieve, but here the *modus operandi* is different; the effect of the warmth in all probability being exerted not directly upon the vessels themselves, but rather upon the sympathetic ganglia in the neck by which the calibre of the vessels is regulated. And here I may perhaps say a word regarding this nervous mechanism. The carotid artery and its branches derive their vaso-motor nerves from the superior cervical ganglion, and to disturbance of the functions of this ganglion are, I believe, due the headache caused by dental irritation. (p. 102.) I do not know that du Bois-Reymond's headaches depended upon a decayed tooth, but I should very strongly suspect it. In his case there was distinct evidence of sympathetic disturbance in the dilatation of the pupil of the affected side. In my own case I have never noticed any dilatation of the pupil, but I have observed a curious transference of pain from the temple to the occiput, and from the occiput to the temple again, so rapid that I think it can only be ascribed to a disturbance of the cervical ganglion. The explanation which I give of it is this: That at one time, the vaso-motor branches of the temporal are affected, at another those of the occipital artery, and the rapid change of the headache from one part to another is due to an alteration in the ganglion itself. The occurrence of occipital headache in place of temporal in my own case attracted my attention to decayed teeth as a cause of occipital headache, and I found that it is by no means unfrequent. The other day I saw a scientific man who was complaining much of occipital headache on the left side. I at once said to him, "The second molar on the left side of your lower jaw is decayed." This statement was not quite correct, for the decayed tooth turned out to be the second molar on the left side of the upper jaw, but it was so near the truth that it astonished him greatly, because it had never occurred to him that there could be any connection between a pain at the back of his head which gave him great annoyance and a decayed tooth which did not trouble him in the least.

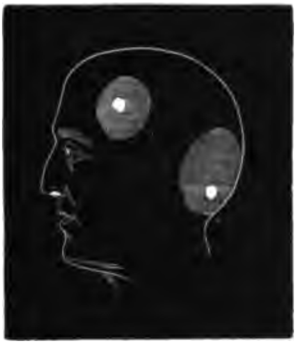

Fig. 11.—Diagram showing the seat of pain in megrim or occipital headache depending on decayed teeth or defects of the eyes. The shaded area shows the seat of the pain; the spot in each area indicates the seat of tenderness on pressure.

In regard to the situation of headache depending upon decayed teeth, I find that a decayed molar in the lower jaw usually gives a temporal or occipital headache, and a decayed molar in the upper jaw causes temporal headache which is rather farther forward than that caused by the lower jaw. Decayed incisors or eye-teeth are more likely to cause frontal or vertical headache.

Another source of headache closely allied to the teeth is sore-throat. Enlarged and inflamed tonsils are apt to give rise to headache, which usually tends to run up in front of the ears and over the vertex. On one occasion I suffered from inflammation of this sort, and found that at first the pain was diffused all over the head, so that one could not localise it at one point more than another, but that as the inflammation went on, the pain became more localised at the sides of the head and vertex, and gradually extended downwards and became more localised, until it was felt very distinctly in the throat, and hardly in the head at all.

Perhaps a still more frequent source of headache than even decayed teeth are abnormal conditions of the eyes. The headache which comes on after working with the microscope, or after straining the eyes in a picture gallery, is only too well known. It is usually frontal, often extending over the whole breadth of the forehead, but sometimes limited to the forehead above one orbit.

On one occasion I remember seeing a friend who had been working with a microscope, and was suffering from most intense headache. On entering the darkened room in which he was lying, I thought at first that his eyes were jaundiced, but closer examination showed that the apparent yellowness was due to great injection of the vessels of the sclerotic.

It would be going too far to say that frontal headache is always due to an abnormal condition of the eyes, but I believe it is so much more frequently than one would at all suspect. Even the frontal headache which occurs in derangement of the stomach and biliousness is, I think, very frequently connected with an abnormal condition of the eyes to which the indigestion gives rise, for if we press the finger upon the eyeballs during a bilious headache, we not unfrequently find that they are abnormally tense and the intraocular pressure high, so that the eyeball feels almost like a marble under the finger. Curiously enough, too, I have noticed that some persons who suffered from bilious headache in early life begin to suffer from giddiness whenever they become bilious as they grow older. This giddiness during a bilious condition began to come on just at the time when their sight began to alter and they commenced to wear spectacles.

But frontal headache is not the only one which may arise from abnormal conditions of the eyes, for megrim or sick headache is very frequently associated with, and probably dependent on, inequality of the eyes, either in the way of astigmatism, myopia, or hypermetropia.

Formerly I used to suffer myself from megrim, which might affect either side of the head, but for some years past it has almost invariably affected the left side. My right eye is normal, but the left is hypermetropic, and probably the greater strain that is thrown upon this eye in reading leads to the headache on the same side.

The relationship between megrim and abnormalities of vision has been pointed out by several authors, amongst others Mr. John Tweedy, Dr. Savage, Mr. Higgins, Dr. Brailey, and Mr. Carter.

The good effects of spectacles in megrim was well illustrated in the case of one of my colleagues who suffered very frequently, but after getting a proper pair of spectacles did not get a headache half so often as before.

Although dental irritation and abnormalities of vision are probably the two most common and most important causes of headache, yet the nose and ear are also channels through which external irritation may operate in producing headache, and they must not be overlooked. As far as my experience goes, headache depending upon disease of the nose is at the top of the head, just behind the commencement of the hairy scalp, and headache here should always lead to an examination of the nose.

The frontal headache, however, which occurs in ordinary cold in the head, and which probably depends upon congestion of the mucous membrane lining the frontal sinuses, is known to every one; and Dr. Hack[1] of Freiburg has observed several cases both of megrim and of frontal headache depending upon congestion of the mucous membrane covering the inferior turbinated bones, and he has been able to effect a radical cure in several cases by the application of the galvano-cautery to the inflamed and swollen mucous membrane.

In the causation of headache, however, we have always to consider two things—the condition of the organism generally and the local source of irritation. We have hitherto directed our attention to the local sources of irritation, but local irritation alone will not cause headache. We find that numbers of people have decayed teeth, and yet they suffer neither from toothache nor headache, excepting perhaps occasionally. The source of irritation is constantly there, and yet the effect it produces appears to be only occasional. The occasional pain is the reaction of the organism to the irritant, and its intermittent occurrence is probably to a great extent due to the organism being only occasionally in such a condition as to give this reaction. We know that the pain of toothache, for example, is often at once remedied by a brisk purgative, although the tooth remains in the same condition, the purgative having so altered the organism that it no longer responds in the same way to the irritation of the tooth. I use here the vague term *organism* in place of using the more definite one nervous system or cerebral centre of sensation, because we do not at present know the exact mechanism by means of which brisk purgatives produce such an effect. It is highly probable that they do so not directly but indirectly, by modifying the irritation or by clearing away poisonous substances from the intestine.

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[1] Ueber eine operative Radical-Behandlung bestimmter Formen von Migräne, Asthma, Heufieber, u. s. w. Von Dr. Wilhelm Hack, Wiesbaden, Bergmann.

There are several conditions of the body which tend to give rise to headache more especially; these are indigestion, biliousness, constipation, fever, plethora, anæmia and debility, rheumatism, gout, and albuminuria.

The headache of indigestion, biliousness, and constipation is generally frontal, but it does not always affect the same part of the forehead. As a rule, derived from an exceedingly large experience in the Casualty Department at St. Bartholomew's Hospital, where one sees cases not by tens, but by hundreds and thousands, I have found that frontal headache associated with constipation is removed by the Haustus Magnesii Sulphatis[1] of the hospital Pharmacopœia; that headache just above the eyebrows, and not accompanied by constipation, is relieved by Haustus Acidi Nitro-hydrochlorici;[2] while headache, also unaccompanied by constipation but situated higher up on the forehead, just below or at the commencement of the hairy scalp, is relieved by alkalies, usually given in the form of Haustus Calumbæ Alkalinus (p. 125), twenty minutes before meals. Occipital headache is also sometimes associated with indigestion, and is sometimes relieved also by Haustus Acidi Nitro-hydrochlorici, but in it careful attention should be paid to the condition of the teeth. The headache of fevers is usually frontal, and this is, I think, associated to a great extent with alteration in the vascularity and tension of the eye. When resident physician in the Infirmary at Edinburgh, I used to see a number of cases of typhus fever, and in this disease the injection of the eyes is well marked; and I was strongly reminded of the eyes of typhus patients by the appearance which, as I have already mentioned, I observed in my friend who was suffering from headache after working with a microscope. Both the injection of the eyes in typhus and headache in fevers generally, whether it be accompanied with injection of the eyes or not, probably depends upon the increased circulation caused by the greater heat of the body in the febrile condition, and by the presence of morbid products or poisons in the blood, which not only act upon the eyes, but upon the nervous system and the body generally.

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[1] The formula for the Haustus Magnesii Sulphatis is:—

Sulphate of Magnesia, 1 drm.
Diluted Sulphuric Acid, 10 minims.
Syrup of Red Poppies, ½ drm.
Mint water to 1 oz.

[2] The formula for the Haustus Acidi Nitro-hydrochlorici is:—

Dilute Nitro-hydrochloric acid, 10 min.
Spirit of Chloroform, 10 min.
Tincture of Orange peel, 20 min.
Water, 1 oz.

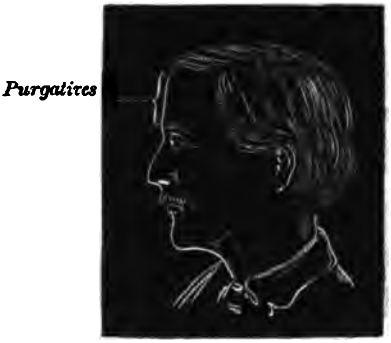

Fig. 12.—To show the position of the frontal headache which in cases of constipation is relieved by salines.

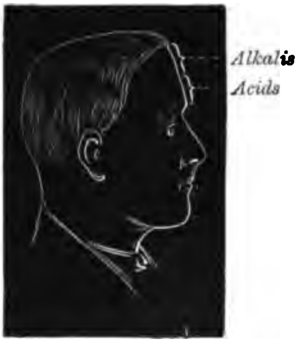

Fig. 13.—Showing the position of the frontal headaches relieved by acids and alkalies in the absence of constipation. The lower is relieved by acids, the upper by alkalies before meals. The lower one also indicates the occasional position of headache caused by straining the eyes.

Closely associated on the one hand with the headache of indigestion, and on the other hand with that of fever, is the headache of plethora, which is usually frontal or occipital, and depends both on the powerful circulation which is present in this condition and probably also on the products of tissue waste circulating in the blood.

The headache of anæmia and debility is usually vertical, and is usually associated with feelings of flushing, of heat, or sudden chilliness, and muscæ volitantes, and not unfrequently also with gastric derangement, evidenced by pain in the epigastrium shooting through between the blade-bones.[1]

The rheumatic headache very frequently is felt over a considerable part of the head generally, and is associated with tenderness over a great part of the scalp. The tenderness is sometimes excessive. This headache is frequently relieved by the administration of iodide of potassium. A formula given me by Dr. Image of Bury St. Edmunds for this headache, and which is very useful, contains 5 grs. of iodide of potassium, a drachm of tincture of valerian, and a drachm of aromatic spirits of ammonia. But although the rheumatic headache assumes very frequently the form I have just described, it appears to me sometimes to show itself as a frontal or temporal headache, and to be associated with a rheumatic affection of the muscles of the eyes. On one occasion I administered some salicylate of soda for the relief of pains in the limbs which were associated with severe headache. The effect of the salicylate in relieving the headache was almost magical, and I have accordingly tried it in a number of cases since. I found that 2½ grs. of the salicylate of soda, given either alone or with some aromatic spirits of ammonia, every half-hour while the headache lasts, will often after one or two doses cut short the headache, which would otherwise have continued for a whole day or more. I have been unable at present to distinguish

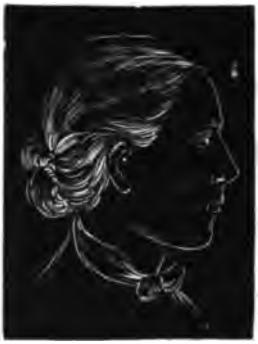

Fig. 14.—Diagram to show the position of the vertical headache of anæmia.

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[1] This group of symptoms is usually much relieved by the administration of iron with a bitter tonic. The formula for the draught of Quassia and Iron in St. Bartholomew's Hospital Pharmacopœia is:—

Solution of Perchloride of Iron, 15 minims.
Infusion of Quassia, 1 oz.

a gouty headache *per se* from the headache of plethora or indigestion, and should suspect the gouty element only from the patient's family and personal history.

In albuminuria the headache may be frontal, or may be felt as a tight band surrounding the head.

In syphilis its situation may vary, and it is generally recognised by its history, by its being more or less constant, remitting instead of intermittent, and by its frequent association with persistent tenderness at a limited spot.

I may now, in conclusion, sum up shortly the main points I have endeavoured to bring forward in this paper.

Headache is usually the product of two factors—local irritation and general condition.

The chief local causes are decayed teeth and abnormalities of the eye, although diseases of the ear and nose, inflammation of the throat, and local irritation of the pericranium or of the skull in rheumatism and syphilis, are not to be forgotten. Decayed teeth may give rise to temporal or occipital headache when the molars are affected, and also I think to frontal when the incisors are decayed.

The chief abnormal conditions of the eye which cause headache are strain from reading, or working with imperfect light, or for too long a time, myopia, hypermetropia, astigmatism, inequality of vision between the two eyes, and last, but not least, glaucoma.

Besides this, I think that alterations in the circulation and intraocular pressure are frequently produced by bile or poisonous substances circulating in the blood, and that probably also a rheumatic condition, affecting either the eye itself or the muscles which move it, is a not uncommon cause of headache. Where both eyes are equally affected, the headache is usually frontal; but when one eye is more affected than the other, the headache appears either in the form of brow ague or megrim.

In treating any case of headache, therefore, the first thing to do is to see whether the teeth are sound and the eyes normal. If anything is found wrong with either the teeth or the eyes, the defect should be at once corrected. The throat, ears, and nose should also be examined to see if any source of irritation is present there, and the surface of the scalp tested by pressure for rheumatic or syphilitic inflammation. Percussion should also be tried over the head in order to determine whether or not there is any intracranial tumour.

The locality of headache is probably determined chiefly by the local source of irritation, but this differs according to the general condition in a way that it is at present impossible to explain. Thus frontal headache with constipation is usually relieved by purgatives; frontal headache without constipation, just above the eyebrows, is relieved by acids; and a similar headache, situated higher up at the commencement of the hairy scalp, is relieved by alkalies. Vertical headache is usually associated with anæmia, and is relieved by iron. The more or less continuous headache of syphilis is usually best relieved by iodide of potassium; but in order to gain relief the dose must sometimes be much larger than that usually given, and may range from 5 grs. up to 30 grs. for a dose. Smaller quantities of iodide of potassium are usually sufficient to cure the rheumatic headache.

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ON DYSPEPSIA.[1]

(*'The Practitioner,'* VOL. XIX., *December* 1877.)

To the healthy body the performance of its functions is a source of pleasure. The strong muscles rejoice in work, and exercise, to use up their superabundant energy, becomes almost a necessity; the brain works easily, ideas flow readily and clearly, and thought becomes a delight. Both bodily and mental work, however pleasant, entail waste which must be supplied, and the pleasures of exercise lead to the pleasures of the table, giving a zest to the plainest food and enhancing the flavour of the most delicate viands. When the day is over, exercise and food give place to the pleasure of sleep, and almost as soon as the head is laid on the pillow, the dreamy delightful languor which succeeds healthy exercise passes into dreamless slumber, from which the sleeper awakes on the ensuing morn, refreshed and strengthened for the occupations of a new day. With such a condition as this we are probably all more or less familiar, and its full enjoyment during a walking tour is, to my mind, one of the greatest charms of an autumn holiday. But unfortunately the conditions of life do not allow men to remain constantly under the favourable conditions in which we are placed during our vacation. Some have hard grinding bodily fatigue, continued hour after hour until the tired limbs can scarcely move, others have the still more exhausting mental drudgery, when, despite the exhausted brain, the closing eyelids, and the aching head, the cramped fingers must drive the pen scratch, scratch, scratch, long past the midnight hour, into the cool grey of early morning. Excessive mental and bodily work thus become not a blessing but a curse, and although they generally bring some compensation by increasing the pleasures of sleep and rest, it is not always so. For although the wise man says "sleep is sweet to the labouring man, whether he have eaten little or much," yet not unfrequently excessive mental labour drives sleep from the couch, and weary work is succeeded by more uneasy rest. Too much work thus weakens both the muscles and the brain, and causes the exercise of their functions to be performed imperfectly, and attended with suffering, instead of being, as in the healthy state, a source of pleasure. Now the same is true of the digestive organs. Within certain limits, the stomach, liver, and intestines are very accommodating, and will digest much or little food, single dishes or a variety of meats, with great facility, but whenever the tax upon their power becomes too great, they refuse to act, and in various unpleasant ways make known to their master that they are on strike, and either want less work or work of a different sort. As the stomach is that part of the digestive system into which food is first collected, and which therefore is generally the first to suffer from overwork, we will consider its part in the digestion of food first, and the indigestion due to the imperfect performance of its functions, without at present taking up those of the intestines or liver.

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[1] Read before the Abernethian Society at St. Bartholomew's Hospital.

We have now so much knowledge of an exact nature regarding the process of digestion, that we are apt to forget how recent is its date, and I therefore think it may not be unadvisable or uninteresting to devote a few minutes to describing the successive steps by which it has been acquired. The knowledge that food was broken up and partially dissolved in the stomach must have been early acquired, for the ancients as well as the moderns sometimes overtaxed their stomach with food or drink, and led that organ to reject the meal which had shortly before been consumed. In the paintings on Egyptian tombs,[1] we see ladies depicted who are suffering in this way; and although they might not be themselves in such a condition as would lead them to examine very closely into the nature of the vomited matters, it could hardly escape the attention of the attendants or of the physicians who might be called in, and who sometimes, indeed, produced vomiting,[2] that these matters consisted of the broken down and partially dissolved foods which had constituted the last meal. But how this solution was effected long remained a mystery. Some said that it was effected by the stomach grinding down the food in the same manner as the gizzard of a bird; but the ancients generally seem to have had the idea that it was effected by heat and moisture leading to a sort of putrefaction,[1] or by a secretion from the stomach with special solvent powers.[2]

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[1] Wilkinson's *Ancient Egyptians*, 1854, vol. i. p. 52.

[2] Wilkinson, *Op. cit.*, vol. ii. p. 350.

The experiments of Réaumur in 1752, and of Spallanzani in 1783, showed that the food was not simply ground by the stomach, for substances enclosed in perforated metallic balls, and thus protected from any mechanical action of the gastric walls while exposed to the solvent action of the gastric juice, were found to be dissolved when the metal case was after a certain time withdrawn from the stomach by means of a string attached to it. The theory of putrefaction was also disposed of by Spallanzani,[3] who found that instead of this process going on in the stomach, it was immediately checked when substances in which it had begun were introduced into the organ.[4] But it is highly probable that the ancients meant something different from ordinary putrefaction, although they may have used the name to designate the process which takes place in the stomach during digestion, and Boerhaave propounded the theory that digestion was a process of fermentation. The questions, therefore, remained to be solved —Is digestion a simple solution in the gastric juice? or is it a change in the constitution of the food by oxidation or otherwise?[5]

In most experiments the gastric juice had been obtained in an impure state, and its admixture with saliva or mucus had rendered its reaction doubtful, but Carminati, in 1785, determined that it was acid when obtained pure during digestion, although nearly neutral during fasting in animals. Prout, in 1824, found that the acid was hydrochloric, and Tiedemann and Gmelin, in 1827, finally confirmed the results of Carminati. They were inclined to attribute the solvent power of the gastric juice to the acid it contained, but their own experiments, as well as those of Johannes Müller, and still more of Dr. Beaumont, showed that acid of the same strength had nothing like the solvent power of the gastric juice, and that this secretion must therefore contain a peculiar solvent principle. This Eberle supposed to be the gastric mucus, but a few trials proved that this mucus alone would not dissolve the food, and that digestion took place only when it was combined with acid. The next step was taken by Schwann in 1836, and by Wasmann in 1840. They showed that it was not mucus in general but a special substance, pepsin, contained in the mucus of the stomach, which digested albuminous matters when combined with acid. The researches of Brücke have shown what the proper strength of the acid is, and that when it is either too strong or too weak digestion is hindered. The requisites for the rapid digestion of albuminous matters in the stomach, then, are an abundant supply of gastric juice and its proper composition as regards the proportion of acid and the amount of pepsin present in it. These requisites are supplied in the healthy stomach, which secretes a large quantity of active juice during digestion; but in disturbed and diseased conditions, either of the organ itself alone or of the whole system, they are more or less wanting, and digestion is imperfectly performed—we have, in fact, indigestion.

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[1] Hippocrates, etc., Haller's *Physiol.* t. vi. p. 322.

[2] *Paulus Aegineta*, vol. i. p. 91.

[3] Spallanzani, *Expériences sur la Digestion*, Genève, 1783, p. 90.

[4] Spallanzani, *Op. cit.*, p. 310.

[5] Tiedemann and Gmelin, *Journ. de Physiol.* vii. 1827, p. 144.

We owe our knowledge of the condition of the stomach in great measure to a fortunate accident which established a gastric fistula in a young man, and enabled observations to be made on him such as we can usually make only on animals—observations which were, however, imperfect, and have since been extended as well as confirmed by gastric fistulæ artificially established in dogs. A young Canadian, Alexis St. Martin, was wounded by a charge of duck-shot, which carried away the muscles on the left side of the thorax for several inches, along with the anterior half of the sixth rib, broke the fifth, and lacerated the left lung, stomach, and diaphragm. Notwithstanding the extent of his injuries, he finally recovered under the care of Dr. Beaumont; but the stomach became adherent to the abdominal wall, and preserved a permanent opening, which was usually stopped up by a valve of mucous membrane. This valve could be readily pushed back by the finger and the interior of the stomach distinctly seen. After St. Martin's recovery, Dr. Beaumont took him into his service and made numerous observations upon him, which, as I have already said, have been of the greatest value.

According to Dr. Beaumont, "the inner coat of the stomach, in its natural and healthy state, is of a light or pale pink colour, varying in its hues according to its full or empty state. It is of a soft or velvet-like appearance, and is constantly covered with a very thin transparent viscid mucus, lining the whole interior of the organ. Immediately beneath the mucous coat, and apparently incorporated with the villous membrane, appear small spheroidal or oval-shaped granular bodies, from which the mucous fluid appears to be secreted." On the application of aliment, the action of the vessels is increased, the colour heightened, and the vermicular motions are excited. The small gastric papillæ begin to discharge a clear transparent fluid, which continues rapidly to accumulate as aliment is received for digestion. "This fluid is invariably distinctly acid. The mucus of the stomach is less fluid and more viscid or albuminous, and sometimes a little saltish, but does not possess the slightest character of acidity. On applying the tongue to the mucous coat of the stomach, in its empty unirritated state, no acid taste can be perceived. When food or other irritant has been applied to the villous membrane, and the gastric papillæ excited, the acid taste is immediately perceptible."[1] It must be noted, however, that this acidity, though distinct, is not great, not such as to set the teeth on edge. The experiments of Bernard on dogs have given the same results as those just described, but have shown besides that while moderate stimulation of the stomach causes secretion, great irritation has an entirely opposite affect. For example, when the mucous membrane was gently stroked with a glass rod it became rosy red and secreted juice abundantly, but when violently rubbed the colour disappeared, it became pale, the secretion of gastric juice stopped, that of mucus seemed to be increased, and the animal seemed sick, and began to vomit. This experiment throws considerable light on the relation between the condition of the stomach and the appetite, and enables us in some degree to diagnose the condition of the stomach from the answer we get to our first question regarding the digestion of our patients—How is your appetite? Various opinions have been held regarding the cause of hunger, some attributing it to the friction of the sides of the empty stomach against each other, others supposing it to be due to the gastric juice acting on the mucous membrane in default of anything else to attack. The real cause seems to be twofold. 1st. A certain condition of the stomach, probably consisting in distension either of the lymphatics or capillaries of the mucous membrane, which is relieved when food is ingested and secretion begins. 2nd. A condition of the system which is not removed by the mere presence of food in the stomach, but requires for its alleviation the absorption of nutritive material into the blood. This second condition may be observed in children suffering from tubercle of the mesenteric glands, where, owing to the imperfect absorption, a voracious hunger seems to consume the little sufferer, notwithstanding the quantities of food with which its stomach is constantly filled. The first cause of hunger or appetite, for they are merely gradations of the same condition, is the commonest, and the one with which we are at present concerned. Normally the stomach seems to prepare itself at regular intervals for the work it has to do, and as meal-time approaches the minute vessels probably become distended, and a feeling of appetite certainly appears. In some persons the time when this feeling comes on can be modified by mental impressions. If they know they are to dine at seven instead of at six, the appetite appears a short while before the time fixed for the meal, but if they think they are to dine at six and do not get dinner until seven, the expectant stomach begins to crave at six, and causes much discomfort during the ensuing hour while its wants are unsatisfied. In some conditions of the body we find that there is no appetite at first, but after a mouthful or two the desire to eat comes on, and the person rises from table after a full meal. Although I have not observed that Dr. Beaumont mentions this condition as occurring in St. Martin, yet we should be inclined to associate it with a mucous membrane paler and more flaccid than usual.[1] The lymphatics and capillaries, instead of being full before the meal, would only become so when the circulation in the stomach was increased by the introduction of food, and their distension, after the first few mouthfuls, in this debilitated condition of the stomach would become equal to that in the healthy mucous membrane before any food had been taken at all.

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[1] Beaumont, *Physiology of Digestion*. 2nd ed., Burlington, 1847, p. 95.

In other conditions again we find that the patient has, as he says, a good appetite and feels very hungry before meals, but after the first mouthful or two he is satisfied, and cannot eat any more. Here we in all probability have a condition of congestion greater than normal, so that instead of mere appetite positive hunger is felt before meals, but as soon as the first mouthfuls are taken, the increased vascularity which they induce raises the irritability of the stomach, and the stimulus of the food acts upon the mucous membrane in the same way as rough rubbing did in Bernard's experiment, destroying the appetite and even producing nausea. As a general rule, indeed, whenever the appetite becomes unusually good without any apparent cause, we may look out for a so-called bilious attack, for if the irritated condition of the gastric mucous membrane, which is at first felt as appetite, goes on increasing it soon proceeds to anorexia, nausea, and vomiting.

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[1] Beaumont, *Physiology of Digestion*, Burlington, 1847, Expt. 45, 3d. Ser.

An example of this may be given from Dr. Beaumont's observations. On examining the stomach of St. Martin one day, four hours after breakfast, and an hour after the chyme resulting therefrom had passed through the pylorus, he found that "several red spots and patches abraded of the mucous coat, tender and irritable, appeared over the inner surface.[1] The tongue too had upon it a thin whitish fur. Yet his appetite was rather craving." Two days after this Dr. Beaumont introduced some food in a muslin bag, through the aperture, into the stomach, and on withdrawing it five hours afterwards, found that it came from near the pylorus, and was covered with a coat of mucus and yellow bile. "The contents of the stomach," he says, "have been unusually acrid since yesterday morning, and St. Martin complains of unusual smarting and irritation at the edges of the aperture; countenance sallow, tongue covered with a thin yellowish coat; and several deep red patches on the inner coat of the stomach; does not feel his usual appetite." Had St. Martin been left to himself and continued the diet of the previous days, consisting, as it appeared to do, of pork, steak, and fried sausages, we should probably have had him suffering from vomiting, and possibly sick headache, but Dr. Beaumont dropped into his stomach twelve grains of blue pill and five cathartic pills, which operated next morning with the effect, Dr. Beaumont says, of removing the symptoms and restoring healthy sensations and functions. Had no pills been given the condition of the stomach next day would probably have been such as Dr. Beaumont describes on another occasion, when the sick headache was actually present. He had been introducing various articles of food, amongst others fat pork tied to a string, into St. Martin's stomach, and two or three hours afterwards found the smell and taste of the fluid from the stomach to be slightly rancid, and St. Martin complained of considerable pain and uneasiness at the stomach, general debility, and lassitude. The next day the distress at the stomach and pain in the head continued, accompanied by costiveness, a depressed pulse, dry skin, coated tongue, and numerous white spots or pustules resembling coagulated lymph spread over the inner surface of the stomach. Dr. Beaumont accordingly dropped into the stomach half a dozen calomel pills,[1] containing four or five grains each, which in about three hours had a thorough cathartic effect, and removed all the foregoing symptoms, and the diseased appearance of the inner coat of the stomach.

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[1] Beaumont, *Physiology of Digestion*, Burlington, 1847, Expt. 17, p. 180, 3d. Ser.

When looking at a patient's tongue I have often wished that people wore windows in their bodies, and that one could see into their stomachs as readily as into their mouths. This wish is to some extent gratified by a perusal of Dr. Beaumont's observations, for in the three which I have just quoted he gives us a picture of three very common conditions.

In the first we have a craving appetite, tongue showing a thin whitish fur, and stomach with several red spots and abraded patches.

In the second we have loss of appetite, thin yellowish fur on the tongue, sallow, or, as we should often term it, bilious countenance, and stomach showing several deep red patches.

In the third the appetite is not mentioned, but we may conclude that there was none, as St. Martin had distress and uneasiness in the stomach, the tongue was coated, there was debility, lassitude, costiveness, depressed pulse, dry skin, and headache. The stomach showed numerous white spots or pustules.

Curiously enough, however, the stomach sometimes showed signs of extensive disturbance without any apparent affection of the general health. This was especially noticeable after drinking spirits too freely. The mucous membrane then presented an erythematous appearance and livid spots, from the surface of which exuded small drops of grumous blood, numerous patches of aphthæ, a thick coating of mucus, and the gastric juice mixed with thick ropy mucus or muco-purulent matter slightly tinged with blood resembling the discharge from the bowels in dysentery. This condition of the stomach was accompanied by a thin, yellowish brown fur on the tongue, and uneasy sensation and tenderness at the pit of the stomach, and some vertigo with dimness and yellowness of vision on stooping down and rising again, and a sallow countenance, but otherwise he felt well and had a good appetite.[2] These four observations of Beaumont's describe the symptoms and appearances of the tongue which we usually meet with in cases of transient indigestion, and depict the condition of the stomach which he found associated with them.

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[1] Beaumont, *Physiology of Digestion*, Burlington, 1847, Expt. 1, p. 118, 2nd Ser.

[2] *Ibid.* Burlington, 1847, p. 252.

We have now to consider the causes which induce these appearances, and we may shortly describe them as irritants of the stomach—

a. From excessive quantity.

b. From improper mechanical or chemical qualities.

A meal excessive in quantity will act as an irritant because a longer time will be required for the stomach to dissolve it, and during all this time the undissolved pieces of food are being rubbed up and down the mucous membrane and irritating it mechanically.

An improper quality of food may have a similar action mechanically. Suppose a lump of cocoa-nut to be eaten, the pieces when swallowed will be absolutely unacted on by the stomach, however long they remain there, and at the time when the organ ought to contain nothing but a soft pulpy chyme, which it would pass on to the duodenum, its walls are stimulated by the unaccustomed presence of the bits of kernel, hard and unyielding as at the moment they were introduced.

Other substances are injurious on account of their chemical properties. Alcohol acts as an irritant by its chemical qualities, producing, when its use is continued, very extensive alterations in the mucous membrane, and it is to be remembered, that some substances which are not in themselves irritant may become so from changes which they undergo themselves, or occasion in other foods after their introduction into the stomach. Thus, fat pork is not an irritating substance—far from it; but it may become rancid in the stomach, and the fatty acids thus liberated may act as powerful irritants. Some cheese is indigestible on account of its insolubility and hardness, in the same way that cocoa-nut is, but other cheeses not liable to this objection may prove irritant by inducing the formation of butyric acid from the sugar taken into the stomach in the food or formed there by the action of the saliva and starch which have been swallowed together. Butyric acid appears to be the cause of that uncomfortable feeling known as heartburn, for Dr. Leared found that a pill of some sweet inert substance dipped in this acid and swallowed reproduced the sensation of heartburn exactly. A very acid condition of the contents of the stomach acts as an irritant and may cause vomiting, the vomited matters being so sour as to set the teeth on edge. What the exact cause of this sourness is I do not know, whether it be hydrochloric, lactic, butyric, or other acid, nor do I know exactly the cause of its production, but I well remember having a most violent sick-headache and an attack of vomiting after drinking some new beer which I suppose continued in my stomach the fermentation which ought to have been complete before it was drunk, and which at the same time induced other ingredients of my dinner to join it in the process.

It is a question not yet completely solved how far the mucus of the stomach acts as a ferment in producing acidity, and also whether abnormal substances formed in the intestine are absorbed from it by the vessels, secreted from them by the gastric glands, and poured out into the cavity of the stomach, just as we know that iodine is.

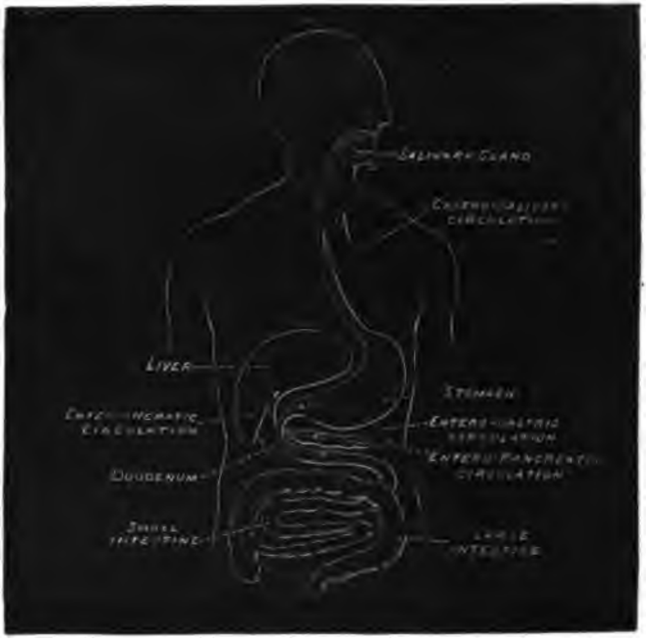
SALIVARY GLAND
ENTERO-SALIVARY CIRCULATION
LIVER
STOMACH
ENTERO-HEPATIC CIRCULATION
ENTERO-GASTRIC CIRCULATION
ENTERO-PANCREATIC CIRCULATION
DUODENUM
SMALL INTESTINE
LARGE INTESTINE

Fig. 15.—Diagram showing absorption from one part, and excretion from another part of the intestinal canal.

Treatment of Temporary Indigestion.—The conditions of the stomach hitherto mentioned, as well as the symptoms that accompany them, disappear when little food and that of a bland and unirritating nature is given for a short time, but recovery is greatly quickened, as we see from Dr. Beaumont's experiments, by the administration of a purgative. Now comes the query, Does this act reflexly upon the stomach through its nerves, or does it clear away from the intestine substances which are being absorbed from it, carried to the gastric walls, and excreted by them just as tartar emetic would be, and causing like it irritation of the mucous membrane? (*Vide* entero-gastric circulation in diagram, and compare p. 178.)

For my own part I am inclined to take the latter view, for on one occasion Dr. Beaumont finding that St. Martin's stomach was out of order, poured in an ounce of castor-oil. This did not purge, and the stomach continued as before. He then gave some calomel, which produced purgation, and the morbid appearances were quickly removed.

The question also arises, to what extent were the erythematous patches, and especially the lividity, due to obstruction to the circulation of the blood through the liver by biliary congestion? Dr. Beaumont says nothing about the existence of piles in St. Martin coincidently with this affection of the stomach. Had he done so it might have given us some useful hints regarding the pathology, obstruction to the portal circulation being likely to manifest itself in the veins of the rectum as well as those of the stomach.

When the irritating substances leave the stomach they may produce a similar effect upon the intestine and cause griping and diarrhœa.

Having said so much regarding slight acute indigestion, I must treat very shortly the subject of gastritis. Acute gastritis, such as is produced by irritant poisons, I will completely pass over, and only say a few words regarding sub-acute gastritis, or gastric catarrh. If any one is obliged to inhale fine irritating dust for some time the mucous membrane of the bronchial tubes becomes inflamed, secretes a quantity of mucus or muco-purulent matter, and the inflammation is accompanied by more or less pain and rawness in the chest and attempts to expel the mucus by coughing. Not unfrequently the same condition comes on after exposure to a draught, although no irritating substance has been inhaled. The mucous membrane of the stomach and that of the lungs are not unlike in their reaction to irritation or cold. I have already mentioned that after St. Martin had been freely partaking of spirits for some days Dr. Beaumont found his stomach inflamed, bleeding, and partly filled with ropy mucus and muco-purulent material. From the ample experience which one gets at this hospital I think we may safely say that had St. Martin gone on drinking for some days more he would probably have got his stomach into such an irritable condition that he would have felt considerable pain and tenderness to pressure in the epigastrium, every morning when he rose he would have vomited some of the mucus which it had secreted over night, and he would have vomited the greater part of each meal shortly after he had taken it. The appearances presented in such a condition would probably have been the same as those actually observed by Dr. Beaumont, but somewhat intensified.

But a similar condition may occur in the stomach from exposure to cold or to a draught, just as in the case of the lungs, although no irritating substance has been swallowed.

How draughts act in producing this condition is a subject not unworthy of the Society's attention, but time would fail me were I to attempt to develop a theory of catching cold either in the stomach or lungs, in this paper.

Treatment.—The treatment which is very successful is to give about ten grains of bismuth with ten of magnesia, in a little mucilage three or four times a day before meals. If the vomiting be excessive it is well to combine a few drops of hydrocyanic acid and some bromide of potassium, and if the pain at the epigastrium be great a warm poultice or even a mustard plaster should be applied.

We must now pass on to the chronic forms of indigestion, and shall first take that of chronic gastric catarrh. The condition of the stomach here is just that presented by St. Martin after his alcoholic indulgence, but when it has continued long the structure of the stomach becomes more or less altered, the gastric glands undergoing fatty degeneration, the connective tissue becoming increased and the mucous membrane firmer.

The symptoms are such as we should expect. There is either little appetite or a craving appetite, easily satisfied—sometimes instead there is a feeling of emptiness in the epigastrium or nausea, although there is little vomiting. From the irritable condition of the stomach there is often pain coming on shortly after food, or more or less constant, but increased by food. The secretion of gastric juice being imperfect, the food is slowly digested and undergoes decomposition, forming gases and acids, and thus giving rise to flatulence and heartburn. The constant discomfort and pain makes the patient irritable, and the imperfect digestion of the food as well as the diminished quantity taken on account of the pain caused by it lead to muscular weakness, and mental languor and depression.

The bowels are frequently constipated, or may be subject to alternate fits of constipation and diarrhœa. The pain complained of is partly due to the tender condition of the stomach, but it is also caused to a great extent by distension of the stomach with flatus.

This condition is very frequently seen in middle-aged or elderly women who come to the hospital complaining of "windy spasms." On inquiring more closely into their symptoms they tell you that they have "pain in the pit of the stomach, striking through between their blade-bones," and further questions will elicit most of the other symptoms already described. There are two remedies in the Hospital Pharmacopœia which work wonders in such cases: the Haustus Gentianæ cum Rheo., and the Haustus Calumbæ Alkalinus.[1]

Both of these draughts contain bicarbonate of soda and a vegetable bitter. When given before meals the alkali stimulates the secretion of gastric juice, while the bitter is supposed to lessen the secretion of mucus. The food thus becomes more rapidly digested, less acid and less gas are formed, and the spirit of chloroform, by acting as a carminative, enables such gas as is formed to be more readily expelled. When taken after meals this beneficial action of the alkali is lost, and it becomes injurious rather than beneficial, except in cases where excessive acidity is developed during digestion.

In regard to the pathology of acute attacks of indigestion, I

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[1] The formulæ for these are:—

Haustus Gentianæ cum Rheo.

Infusion of Rhubarb	½ fl. ounce.
Tincture of Gentian	30 minims.
Bicarbonate of Soda	10 grains.
Spirit of Chloroform	10 minims.
Peppermint water	to 1 fl. ounce.

Dissolve and Mix.

Haustus Calumbæ Alkalinus.

Bicarbonate of Soda	10 grains.
Tincture of Orange Peel	30 minims.
Infusion of Calumba	to 1 fl. ounce.

Dissolve and mix.

mentioned that the livid spots observed by Dr. Beaumont might possibly be connected with obstruction through the liver. An additional argument in favour of this view is offered by the fact that chronic catarrh, such as I have just described, may not only result from repeated or constant irritation of the stomach by alcohol, tea, spiced and indigestible foods, &c., or from cancer or ulceration of a part of the stomach, but also from interference with the portal circulation, as in disease of the liver.

Lastly, we will shortly consider atonic dyspepsia. This condition probably corresponds to that temporarily observed by Beaumont, where the mucous membrane was pale and flabby. The symptoms are here also such as we should expect, the appetite being almost absent, yet the patient is often able to eat a fair meal. The stimulus of the food, however, in a stomach below par does not cause a sufficient secretion of gastric juice, and possibly also the composition of the juice is not all it ought to be; the digestion consequently goes on slowly, there is heaviness and weight at the epigastrium after meals, and the belly becomes tumid from the generation of gas. Eructation gives relief, but not unfrequently is accompanied by heartburn, acids being formed as well as gas, and coming up together.

The symptoms, in fact, are those of imperfect digestion, already described under chronic gastric catarrh, with this difference, that there is no marked pain and tenderness at the epigastrium, and the tongue, instead of being red or covered with fur, through which enlarged papillæ project, is rather pale, flabby, moist, and marked with the teeth at the edges.

This condition depends on weakness of the circulatory and nervous systems. For the secretion of gastric juice demands not only an action of secreting cells, but also a full supply of rich blood to supply the materials needed. Both the cells and the blood-vessels are under the direction of the nervous system, and unless it responds to the stimulus of food, the cells do not secrete, the blood-vessels do not dilate, the juice is not poured out, and digestion does not take place.

The treatment in such a condition is somewhat the same as in chronic catarrh, viz. alkalies and bitters; but in addition we must attend to the general condition of the patient, and give iron to improve the condition of the blood, and the nutrition of both cells and nerves. Strychnia or nux vomica also is a most useful adjunct, as it increases the excitability of reflex centres, including those which preside over the vascularity of the stomach and the secretion of its cells, and thus renders them more ready to respond when the stimulus of food is applied to them. At least this is the theory I have formed to explain the undoubted advantage which we derive from its use in such cases.

In this paper I have not treated the subject of dyspepsia in the way in which it is usually found, either in text-books or lectures, but have preferred to fix upon a few points which may lead to an active discussion, and to a thorough knowledge of the connection between the symptoms we find in our patients and the conditions of the stomach which lead to them.

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ON THE USE AND ADMINISTRATION OF FAT.[1]

('*The Practitioner*,' VOL. XX., *March* 1878.)

SOME time ago, an attempt to swim across the Channel was made by Johnson, then the champion swimmer of England. At first he made good progress, but at length his strength seemed to fail, and when he was at last lifted into the boat by those who accompanied him, his limbs hung down utterly powerless. It appeared that this was not so much due to real muscular exhaustion, as to the effect of cold. We know that when a muscle is cooled down very much, the nerves which supply it refuse any longer to convey impulses to it from the nervous centres, so that however powerful the effort of the will may be, the muscles will no more respond to it than they would in an animal poisoned by curara. Prolonged exposure to the cold water of the Channel appeared to have induced this state in Johnson's muscles. Afterwards, when Captain Webb proposed to attempt the feat, I felt quite certain in my own mind that he would fail, not because I doubted his powers of endurance, but because I thought that his muscles must needs be affected by the cold in the same way as were those of Johnson. But, as the event showed, I was quite mistaken, for Captain Webb succeeded in his attempt. In coming to my conclusion, I had left out of account the influence which a thick coat of subcutaneous fat might have in protecting a human being from the action of external cold, just as it does the porpoise or whale, this coating being no doubt aided by the porpoise oil with which the skin of the swimmer was lubricated, and which still further prevented the loss of heat. One use of fat, in the economy, is to act as a protective against external cold. This protective power appears also to be useful to the individual by diminishing his chances of catching cold on exposure to draughts, and where the coating of fat under the skin is deficient or absent, we must supply its place by non-conducting articles of clothing. We rarely think of covering the chest of a fat person with chamois leather or thick flannel, but these coverings are both pleasant and useful for thin or emaciated persons. In cold climates, a coating of subcutaneous fat all over the body is a useful protection, but in warm weather, or in hot climates, it becomes exceedingly oppressive, as one may see by watching very stout persons or fat animals during the heat of summer. In some animals which are natives of tropical climates, or of regions in which the summer heat is great, although the cold during winter may be extreme, we find that fat, instead of being distributed over the body with more or less uniformity, is collected in huge masses at certain parts. In the zebu, or Brahmin bull of India, in the yak of Tartary, in the buffalo of the American prairies, and in the camel of the African or Asiatic deserts, we find large humps upon the back, which consist almost entirely of solid fat. On looking at a camel, we see that the hump is usually firm and solid, projecting stiffly from the back, but at times it may appear limp and loose, swaying helplessly from side to side, and doubling up like a half empty bag. On inquiring as to the reason of this, we are told that so long as a camel is well fed, the hump remains firm and solid, but that when the animal's food is insufficient it becomes thin, loose, and flabby, a great part of the fat being absorbed from it, while if the camel be kept absolutely without food for days, the protuberance will almost entirely disappear. When, on the other hand, food is again given, the hump regains its former dimensions, so that its use is apparently that of a reservoir of food, which may be drawn upon when the daily aliment is insufficient. We all know that the same thing takes place with regard to subcutaneous fat, as with the fat of the camel's hump, and that whenever the fat assimilated is insufficient for the wants of the economy, the person or animal becomes leaner and leaner, until the fat has almost entirely disappeared. To the question, Where has this fat gone? it is difficult to return a very definite answer. Probably some of it has undergone combustion, without being formed into any other tissue, but another part of it has probably gone to supply the waste of some more important organs, which thus are enabled to live, parasite-like, at the expense of the fat. The blood contains only about one-half per cent. of fat, the muscles more than 3 per cent., the brain 8 per cent., and the nerves 22 per cent. Yet in spite of the large proportion of fat contained in the nerves, they are amongst the last organs to suffer under the process of starvation, and probably their waste is supplied by the fatty matters absorbed from subcutaneous cellular tissue, and brought to them by the blood. The different tissues probably require very different amounts of fat, and the high percentage of fatty matters contained in nervous substance indicates the necessity of fat for the proper performance of the functions of the nerves. Fat may be supplied to the body by various kinds of food—fatty, starchy, saccharine, and albuminous. For although these do not all contain fat, they are all capable of being converted into fat, to a greater or less extent, by the organism. It is not certain that the various fats formed from these different kinds of food have precisely the same composition. It is well known to feeders of cattle that fats differ in quality according to the food upon which the animal has been fattened, and that while, for example, the fat which horses lay on when fed upon corn is tolerably permanent, that produced by feeding on grass is soft, and quickly disappears when the animal is set to work. In his book on *Fat and Blood, and How to Make Them*, Dr. Weir Mitchell quotes the remark of an old nurse that "some fat is fast, and some is fickle, but cod-oil fat is easily squandered." One would suppose at first, that the fat taken in the food would be stored away in the adipose tissue without undergoing any change, but this does not seem to be the case. It appears rather that the fats are split up and modified in such a way during digestion and absorption, that, when deposited in the tissues, their composition becomes tolerably definite in each class of animal. Thus, the composition of the fat of a man will differ from the composition of the fat of a dog, although both may have been fed upon the same mutton suet, the composition of which differed from that of the fat of either. Subbotin found that when a dog was kept without food until all the fat had gone from the body, and was then fed with palm-oil containing palmitine and olein, but no stearin, it nevertheless laid on fat which contained stearin, although in somewhat less than half the normal quantity. When palmitine and stearin were given to a starving dog, but no olein, the fat it laid on contained even more than the normal quantity of olein though less stearin.

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[1] Read before the Medical Society of London, Dec. 10, 1877.

It would almost seem, then, that fat rapidly laid on, as in the case of these animals, contained a greater proportion of olein than normal, whether this were present in the food or not. That fat may be formed from other kinds of food, such as starchy or saccharine, has been shown by Lawes and Gilbert, who found that in fattening pigs, four or five times as much fat was produced among the animals as was contained in their food, and by Liebig and others, who found that bees could form wax, which is a kind of fat, although they were fed on nothing but sugar. This is supported also by the fact that negroes grow fat during the time when sugar-canes are ripe, and when they are constantly sucking the saccharine juice. That fat may be formed from albuminous substances has been clearly shown by Voit and Bauer, in their researches on fatty degeneration, of which we will speak more particularly hereafter. Before the different kinds of food can become available for the wants of the tissues, they must be brought into such a condition as to pass through the walls of the intestine into the blood, and be carried about through the circulation. The starch is converted into soluble sugar by the ferments of the salivary glands and pancreas in the mouth and small intestine, although while it remains in the stomach this change is diminished or arrested by the acidity of the gastric juice. How the sugar yielded by the starch is converted into fat we do not precisely know, although it seems probable that the change of part of it at least into lactic or butyric acids may be one part of the process. The albuminous matters are converted into peptones by the stomach and pancreas. Some of these peptones are further split up during pancreatic digestion, so as to yield leucine, which belongs to the group of fatty bodies. The fats themselves are partially emulsionised, as well as partially saponified, by the pancreas. They then pass either through or between the epithelial cells, which cover the villi, into the lymph spaces in their interior, and thence through the lacteals, mesenteric glands, and thoracic duct into the general blood-current. The amount of fat in the blood may be very considerably increased by food. In a dog, which had fasted for four days, a diet of bread raised the proportion of fat in the blood from 2·6 in the thousand to 3·1; meat raised it to 3·8; and suet and starch to 4·1, a most important observation, to which we shall again have occasion to refer. All these foods, as we thus see, raise the proportion of fat; but besides the fat they all supply other substances to the blood which may be beneficial, but which, in excess, may prove more or less injurious. Thus bread supplies sugar as well as fat. If this sugar undergo the proper changes in the body, it is useful, but if it be in such excess that its combustion is insufficient, it will produce thirst and the other symptoms which we meet with in glycosuria. If the appetite or digestion will not allow of the consumption of sufficient bread to produce this, we may have a deficiency of fat. Meat also, as we have seen, produces fat, but supplies also a large quantity of nitrogenous material which may, like the sugar, prove injurious when in excess. We usually suppose that a diet of meat is the best cure for failing strength, and for weakly persons we are accustomed to recommend beef-tea whenever they feel faint. But Ranke observed that an exclusively meat diet, instead of producing strength, caused weakness and muscular fatigue, the excess of waste nitrogenous products proceeding from the decomposition of this food in the organism seeming to act as a muscular poison.

In order, then, to keep the balance true, and supply the wants of the various tissues without having any excess of waste products, we must have an admixture of various kinds of food, and if one or other be deficient, we either throw additional work upon the organism by making it consume more than a fair share of another sort, and excrete the residue which it does not want, or the tissues and organs which most require the missing food will suffer in consequence. Now, the food which is more frequently deficient than any other is fat, and this may be either because the fat cannot be obtained, or because it cannot be digested. The late Dr. Hughes Bennett used to say that two of the main causes of tuberculosis were the dearness of butter and the abundance of pastrycooks. For fat is an expensive article of diet,—well-fed meat is dearer than badly-fed and lean meat. Butter is expensive, and amongst poor families its place is very often taken by molasses or jam, which no doubt gives a relish to the bread, and is enjoyed by the child, but does not supply the place of butter as a food. Hence, amongst the lower classes, both children and adults suffer because they are unable to obtain a sufficient proportion of fat in their food. The pastrycooks whom Dr. Bennett accused of causing tuberculosis amongst the upper classes, did it, he said, by disordering the digestion, of young girls especially, by puff-paste, and other things of that sort, and thus spoiling their appetite for food, and especially for the fat which they might obtain in abundance if they liked. The result is the same in both classes, for unless the fat be absorbed and assimilated, the result is the same as if the patient could not obtain it. But we notice that in both upper and lower classes there are numbers of children who refuse fatty food, although their parents or guardians are sufficiently careful to prevent them from injuring their digestions by puff-paste, or anything of the kind. There are many children who will utterly refuse to eat a piece of fat meat. They will eat the lean, but carefully cut off every scrap of fat, and lay it at the side of the plate, and will submit to severe punishment rather than eat it. Some persons are in favour of punishing such children, and compelling them to eat fat, but such a course I regard as a total mistake. The instinct of the child is perfectly right, and its indications ought not to be disregarded. If the fat be swallowed under compulsion, it generally disagrees with the child, and makes it sick, as the poor thing well knows. In such cases the proper thing to do is to give the fat in another form. If any one of us were to swallow a lump of butter, by itself, it would very probably make us sick; but if we spread the same butter upon pieces of bread, we can take it not only without discomfort, but with enjoyment. Professor Hugo Kronecker once illustrated this to me very strikingly. He said: "Suppose you get a piece of butter, and are asked to make a sandwich, would you take the whole of the butter, spread it on one slice of bread, and then put the other unbuttered slice on the top of it? If you did, your sandwich would not be half so palatable as if you divided your butter, spread it upon both slices, and then put them together." The reason of this is simple, for in the latter case we get the fat in a much finer state of subdivision, and the more finely it is subdivided, the more do we enjoy it, and the more readily is it digested. A piece of solid butter swallowed alone would melt in the stomach, float about without undergoing digestion, and would probably begin to decompose and yield acrid fatty bodies, which would irritate the stomach and cause sickness. When finely divided by admixture with particles of bread, it would form a creamy mass, which would quickly pass into the duodenum, and be digested and absorbed. In the same way, these very pieces of fat which a child will cut from its meat and put aside, may be rendered quite palatable by being mixed with flour or potatoes. A piece of fat bacon, or the liquid fat in the plate, which would certainly make the child sick if swallowed alone, will be taken with great relish if chopped up finely and well mixed with a mashed potato. Whatever the fat may be which we wish a person to swallow, we should endeavour, by every means in our power, to subdivide it minutely, if there be the least difficulty in digesting it. Besides this, we ought to seek to maintain this state of subdivision in the stomach. For although the fat may be finely subdivided at the time it is swallowed, yet during its sojourn in the stomach it may be melted by the warmth of the body, and the globules gradually agglomerating may again form a solid mass, which will have somewhat the same effect upon the stomach as if it had been swallowed in a solid mass at first. For this reason I think it is advisable, in administering cod-liver oil, to give it an hour or so after, instead of immediately after, a meal, because it will then have a shorter time to stay in the stomach, and will pass out quickly into the duodenum. I think it is better to give cod-liver oil in the form of an emulsion, with gum acacia, rather than with solution of potash or carbonate of potash, because the gum is little, if at all, affected by the gastric juice, whereas the potash will be neutralised, and its emulsifying properties destroyed, so that the particles of oil can again run together. This emulsion with gum acacia is borne by many persons who cannot take pure cod-liver oil, and with whom the potash emulsion also disagrees. Besides the differences in the digestibility of fat due to the mechanical condition of aggregation or subdivision, there are differences also which are due to their chemical composition. Thus, mutton fat is difficult of digestion, while pork fat is easily digested. Butter, too, can be readily taken, and is greatly enjoyed by some persons who cannot take other sorts of fat; and cod-liver oil is usually very well borne, and very easily assimilated. Many opinions have been advanced regarding this ready digestibility of cod-liver oil, and some have sought for its cause in the fact that this oil contains propylene in combination with fatty acids instead of glycerine, like most other fats. Others, again, have attributed it to the minute quantities of iodine, and others to the biliary matters which are found in the oil. The last seems by far the most reasonable supposition. For it has been shown by Neumann that oil of any sort will pass much more readily through a filter, or through an animal membrane moistened with bile, than through one moistened with water. This is still further borne out by the fact which the late Dr. Hughes Bennett used to mention in his lectures, and which has recently been confirmed by the observations of my friend Dr. Russell, that the coarser kinds of cod-liver oil, though more disgusting to the taste, are sometimes more easily digested than the so-called better qualities. These coarse oils are obtained from livers which have been longer exposed to heat, and contain more of the biliary substances. But it is not improbable that the peculiarity in the chemical composition of the oil which I just now mentioned, may have also something to do with its digestibility and utility. The remark of the old nurse quoted by Weir Mitchell, that cod-liver oil fat was soon squandered, seems to point to the greater mobility, if we may so term it, of the cod-liver oil than of other fats, so that it is both more readily laid on and more readily reabsorbed from the tissues than other fats. Perhaps it is to this greater mobility that the beneficial effects of cod-liver oil, as compared with those obtained from the use of other fats, such as butter, are to be ascribed. In a former part of this paper I observed that the quantity of fat circulating in the blood could be greatly increased by food. Now it may not matter very much to tissues of tolerable permanency, such as the subcutaneous fat, what the fatty substances in the blood may be, as time is allowed for these substances to undergo any necessary modifications before they become deposited in the permanent adipose cells. But the case may be different with mobile tissues, such as the colourless blood corpuscles, which are going to form pus, or with the rapidly developing young cells which help to compose the muco-purulent expectoration in bronchitis. For these it may be a matter of great importance that the fat should be easy of assimilation, the time allowed for such assimilation before the cells are thrown off being very limited.

Some time ago I went to a lecture on sick-room cookery. The lecturer described and demonstrated the different methods of preparing gruel, and observed that whenever the gruel was required for a case of bronchitis, a piece of butter should always be added to it, "because," said she, rubbing her chest with her hand, "butter is so very healing to the inside." She was evidently under the impression that the piece of butter got into the chest, ran all about, and thoroughly greased the air-passages. Her notions of physiology were very confused, but I think her practical observation was perfectly correct. It appears to me that in bronchitis, both acute and chronic, a little cod-liver oil is generally much more serviceable than cough mixtures, and patients express themselves very grateful for the relief which it affords by lessening the cough. Indeed, in many cases of chronic bronchitis, it seems to me to be almost the only remedy which affords any marked relief. The use of this oil in phthisis is now so universal that I need say nothing about it, but I will pass on to consider the use of fats as a nervous food. I have read that a well-known barrister always swallowed a large dose of cod-liver oil before going to plead a case, because it enabled him to do better mental work than anything else he could take. I myself, after a trial of various things, have come to the conclusion that fat bacon is one of the most satisfactory things upon which to do hard mental work, and I invariably take it for breakfast whenever I have first to see a number of patients and afterwards to deliver a lecture. We have already seen that the nervous system contains a very large proportion of fat, and we can well imagine that if fat be deficient from the food, that system must necessarily suffer; and more especially is this likely to be the case if, in addition to the deficiency of fat, we have an excess of the products of nitrogenous waste, such as we get from an almost exclusively animal diet. A distinguished physician has made the observation that the prevalence of Bantingism has thrown a great number of nervous cases into the doctor's hands, and a friend lately narrated to me the case of a relative of his own who used to suffer from undefined nervous symptoms. Sometimes he sat and moped about all day, simply because he felt that he could not go out alone, and that he was unable to do anything. He would sometimes start for a walk, and after proceeding a short distance, would turn back again. He lived to a great extent on animal food, and, notwithstanding this disinclination to go out alone, he took a great deal of exercise, both hunting and shooting, so that his symptoms were neither due to want of food nor lack of exercise. Some time afterwards he went to Ireland, and whilst there lived on very fat meat and whisky. All the time he did this he felt perfectly well, but whenever he came back and resumed his animal diet, the symptoms returned.

In persons of a gouty temperament, living to a great extent on animal food, especially when they reach middle age, we not unfrequently observe sugar in the urine. It is, I think, a mistake to term this diabetes; it should rather be called gouty glycosuria. The cause of it appears to be that the oxidation in the body is insufficient to consume all the substances taken in as food, and one or other of them must needs undergo imperfect combustion. Accordingly we find that it is sometimes the nitrogenous products of waste which pass out in a state of imperfect oxidation, large quantities of uric acid and urates appearing in the urine instead of urea. At other times it is the non-nitrogenous products, such as sugar and fat, which escape oxidation, the uric acid being absent from the urine whilst sugar appears, or both uric acid and sugar may be wanting, and fat is accumulated. These processes of imperfect oxidation seem to be very closely connected indeed, for Seegen has noticed, in his work on diabetes, that the disease is often preceded or accompanied by an immense accumulation of fat, so that one patient, who went to be under his treatment at Carlsbad, had actually to be conveyed in a luggage van instead of an ordinary railway carriage. We also notice very frequently that the gouty glycosuria of middle age occurs in stout persons. The same deficiency in oxidation which leads to the accumulation of fat in the subcutaneous cellular tissues, or about the viscera, may also lead to fatty degeneration of organs. The pathology of fatty degeneration has been exceedingly carefully worked out by Voit and Bauer, and the method they adopted was to study the changes which took place in animals during phosphorous poisoning. It is well known that after poisoning by phosphorus the organs of animals are found to be in a state of intense fatty degeneration, and the question which Voit and Bauer tried to solve was, "Whence did this fat come?" It might, they said, have come from the food, or it might have been absorbed from the subcutaneous cellular tissue and deposited, for example, in the liver, or it might have been formed in the liver and other organs from the albuminous constituents of these organs themselves. They solved the question in the following way:—they starved a dog until all its fat had completely disappeared, and then poisoned it with phosphorus. At its death its organs were found to be in a state of exquisite fatty degeneration. The fat here could not have come from the food, for the animal got none; it could not have been absorbed from the subcutaneous cellular tissue and deposited in the liver, for all the subcutaneous fat had gone before the phosphorus was administered. It must therefore have been formed *in situ*, from the albuminous constituents of the organs themselves. So much being ascertained, they had next to discover whether the fat was due to increased tissue change, or diminished oxidation. The albuminous constituents of the organs, they considered, were split up into some nitrogenous substance, and into fat. Normally, both of these undergo oxidation, the nitrogenous substances into urea, and the fat into carbonic acid and water, the splitting up of the tissue and the oxidation going on nearly *pari passu*. If the tissues split up too rapidly for the products of their decomposition to be oxidised, it is obvious that we shall either have the fat accumulating, or the nitrogenous products imperfectly oxidised, as, for instance, in the case of fever, or of gouty glycosuria. If the amount of oxygen received by the tissues be diminished below the normal, a similar result will occur. In phosphorous poisoning both of these were observed, for the urea was greatly increased, showing that the nitrogenous tissues were split up more rapidly than usual, while the amount of carbonic acid exhaled was diminished, showing that the combustion going on in the body was less than usual. The combustion of the tissues is kept up by the oxygen carried to them from the lungs by the red blood-corpuscles, and whenever the supply of oxygen to the tissues is diminished, either by impoverishing the blood of these corpuscles, or by lessening the flow of blood through the part, accumulation of fat or fatty degeneration is likely to ensue. This fatty accumulation from insufficient oxidation may sometimes be observed in women after severe flooding, the patient becoming exceedingly anæmic, and at the same time very fat. The fatty degeneration due to insufficient oxidation is seen in the muscles of a paralysed limb, where want of exercise has nearly stopped the flow of blood, or in the heart, where the coronary arteries have been rendered too small for the normal heart by calcareous degeneration, or where the hypertrophied heart has grown too big for these arteries to supply it. This fatty degeneration of the heart is frequently met with in persons of a gouty habit, tending to become fat, and at the same time suffering from bronchitis, sometimes complicated by emphysema. In treating such persons the question arises, "Does a fatty condition of the heart, and the tendency to accumulate fat under the skin contraindicate the use of the cod-liver oil which might be beneficial to the bronchitis?" For my own part I am inclined to say no. It is quite true that the oil, after being absorbed, will very probably undergo oxidation more readily than the fat which has been forming in the tissues, but it may be nevertheless beneficial by supplying the wants, not merely of the young cells in the bronchial tubes, which form the expectoration, but by supplying the wants of the nervous centres. In such cases I sometimes give cod-liver oil, notwithstanding the fatty condition of the heart, and trust to increase the oxidation by administering iron so as to increase the number of the red-blood corpuscles, at the same time trying to eliminate some of the waste materials by keeping the bowels freely open.

If I were to pursue this subject into all its ramifications, I should take up more time than could be allotted to several papers such as this; and therefore in the present one I have merely attempted a slight sketch of some of the more prominent uses of fat, and tried to give a few hints derived from physiological observation, and confirmed, I feel certain, by the experience of many medical men regarding the method of administering fats, and the diseases in which fat is chiefly serviceable.

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THE PHYSIOLOGICAL ACTION OF ALCOHOL.[1]

('*The Practitioner*,' VOL. XVI., *Jany. and Feb.* 1876.)

Is alcohol a food or a poison? Is it one of the greatest boons ever given to mankind, or one of the greatest curses wherewith they are afflicted? These are questions to which we will receive different answers, according to the circumstances under which they are asked. If we ask the man who has just watched by the bedside of his dearest relation during the crisis of a fever, and seen the parched tongue grow moister, the delirium lessen, the quivering pulse grow stronger and steadier under the influence of alcohol, he will probably tell us that if not a food of the same kind as bread and beef, it is, under certain circumstances, better than either, and a blessing whose greatness can hardly be over-estimated. If, on the other hand, we address ourselves to the squalid wife of a drunken husband, who, instead of employing his time in work, and properly spending his evenings, lies in a state of idleness and incapacity for one half the week, and spends the greater part of the wages he receives for the other half in brutalising himself at a gin-palace, we shall probably hear that it is the greatest curse upon earth, a poison destroying soul and body; and she will tell us that but for it she would be a happy woman, instead of a trembling slave living in constant fear of blows or death, her husband would be a respected member of society instead of a brutal coward, and her home would be a Paradise instead of a Pandemonium.

If we inquire why people drink it at all, the answers we receive are no less contradictory. The negro sweltering under a tropical sun drinks it to cool himself; the London cabman shivering at his stand on a wintry morning drinks it to warm himself; the weary traveller drinks it to strengthen his flagging muscles, and help him onwards to his destination; the literary man drinks it to give subtlety to his intellect, or brilliancy to his wit; the overworked man of business drinks it to rouse him from his apathy, and give sharpness to his bargains; the gamester quivering with excitement drinks it to steady his trembling hand; and the man or woman broken down by misfortune, and weary of life, drinks it to drown care in temporary oblivion.

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[1] Read in part before the Medical Society of London.

Irreconcilable as these answers to our questions may seem, we nevertheless know that they are all more or less true; and, in studying the physiological action of alcohol, our endeavour must be to discover how it is that one drug can produce such opposite effects. This is undoubtedly a difficult task, and one which we cannot at present hope to accomplish perfectly. All that we can do is to take the facts we find and arrange them to the best of our ability, trusting to future research for information on those points of which we are now ignorant. In doing this we must bear in mind that alcohol has a threefold action. 1st. Its local action on the skin or mucous membrane with which it comes in contact. 2nd. Its reflex action on other organs, through the sensory nerves of the skin or mucous membranes. 3rd. Its action on the brain, spinal cord, and other organs to which it is conveyed by the blood.

The action of alcohol is modified, too, by the degree of concentration in which it is employed, and by the admixture with it of other substances, such as ethers of various kinds, hops, vegetable acids, &c. Thus, if we moisten the skin with pure alcohol, in the form of eau de Cologne, or diluted with its own bulk of water, as brandy, and allow it to dry spontaneously, a decided sensation of cold will be produced; but if we employ it in a still more diluted form, as wine or beer, the cold will be much diminished, or become quite imperceptible. This cooling action is due simply to the volatility of alcohol, which during its evaporation abstracts heat from the skin and cools it down. If pure it evaporates quickly and produces much cold, but if mixed with much water the evaporation of the mixture is too slow to produce any marked result. Any other volatile substance would have a similar effect, although its other actions upon the body might be utterly different from those of alcohol.

And, indeed, we get a very different result from alcohol itself, if, instead of allowing it to evaporate spontaneously, we prevent evaporation altogether by covering the moistened skin with gutta percha tissue. Instead of coolness we get a burning feeling, most intense if we use pure alcohol, or eau de Cologne, less with wine and imperceptible with beer. We have got rid of the action which alcohol owes to its volatility, and we have brought into play another which it owes to its chemical properties. So long as it could evaporate readily it acted almost entirely on the epidermis, but when evaporation is prevented it soaks through the epithelium and acts on the vascular tissues beneath. This is better seen if, instead of applying the alcohol to the skin, where the epidermis presents a considerable resistance to its passage, we put it into the mouth, where the thinner epithelium offers less obstruction. Almost immediately after its introduction we experience a burning sensation, which increases for a little while, and then gradually diminishes. If we keep it in the mouth long enough, we notice that the mucous membrane changes its character, and becomes whiter, more opaque, and somewhat corrugated. Although the burning feeling appears to be accompanied by an increased flow of blood to the part, and its disappearance by a diminished flow, yet it is not due to the warmth of the blood, for water at a temperature much above that of the blood produces no such feeling in the mouth. Both the sensation of burning, and the visible alteration in the mucous membrane, are due to the action of the alcohol upon the tissues, and we shall better comprehend the nature of this if we compare it with that of other substances. A piece of hot metal, or a solution of corrosive sublimate, will also cause a burning feeling, and an alteration in the mucous membrane, but, instead of being transitory, it will be more or less permanent. Now there is one point in which they all agree, viz. they all coagulate albumen; and the whitened appearance of the mucous membrane of the mouth after brandy has been long applied to it, is no doubt due to the precipitated albumen on the surface obscuring the red colour which the circulating blood imparts to the tissues beneath. But there is this great difference between the action of alcohol and that of heat, or of corrosive sublimate. The latter produce permanent coagulation while the coagulum formed by alcohol readily dissolves again in water, or in the liquids of the body.[1] Thus its action is more transient; and, if it is only allowed to act for a short time, its effect is counteracted by the blood which dissolves the albumen as fast as it is coagulated, so that we do not see any opacity of the mucous membrane of the mouth, unless alcohol has been acting on it for a good while. When frequently applied to the skin, and allowed to evaporate, it seems to act on the epithelium and harden it, and thus it is frequently used to prevent the formation of bedsores and cracked nipples.

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[1] The coagulation of albuminous fluids by alcohol seems due in the first instance to the simple abstraction of water, and when this is again added, they re-dissolve. If the alcohol acts for a long time upon them, however, their constitution seems to undergo a change, and they become insoluble in water.

Most substances which possess the power of coagulating albumen, such as tannin, catechu, kino, logwood, sulphate of copper, sulphate of zinc, &c., act as astringents when taken internally, and even corrosive sublimate, although not usually reckoned among their number, is strongly recommended in some forms of diarrhœa by Professor Sydney Ringer. Alcohol is no exception to the rule, and we all know that a person suffering from an attack of diarrhœa usually flies to the brandy-bottle for relief before he thinks of consulting a medical man. We know too little about the action of astringents to say positively that alcohol owes its efficacy in this respect to its power of coagulating albumen, but we certainly can say that this properly appears to be the only one it possesses in common with catechu and kino.

The simple experiment of putting a little brandy in the mouth is instructive not only by showing us the local changes which alcohol produces in the mucous membrane, but by reminding us of the second kind of action which alcohol exerts, viz. reflexly through the nervous system. At the same time that the burning is felt, the saliva begins to flow copiously into the mouth. The alcohol has not come in contact with the salivary glands at all, but through the sensory nerves of the mouth it has acted on the nervous centres, and through them upon the vessels and secreting cells of the gland. If we swallow the brandy instead of ejecting it, the feeling of warmth which we experience along the course of the œsophagus and in the stomach itself, informs us that it acts on the mucous membrane of these organs in the same way as on that of the mouth. So far as I am aware, we are at present ignorant of the reflex actions which alcohol exerts through the mucous membrane of the œsophagus, but those which it produces through the stomach are of great importance. First of all come those which concern the secretions and movements of the stomach itself. When the stomach is empty its mucous membrane as seen through a gastric fistula is pale and only covered with a little mucus. If a little alcohol is now introduced the blood-vessels of the mucous membrane dilate and it becomes of a rosy red colour, its glands begin to secrete copiously, beads of gastric juice stand upon its surface, become larger and larger until they can no longer preserve their form, when they coalesce and run down together in a little stream.

Now every slight stimulation of the stomach seems to be felt as appetite, and thus we find that substances having the most diverse properties induce a desire for food. Alcohol does this in a marked degree, and a nip of brandy is very frequently taken as an appetizer. But appetite seems really to be only an expression of slight uneasiness on the part of the stomach. It cannot distinguish sensations like the mouth, and alcohol which on the tongue causes burning, quassia which causes bitterness, and minute doses of arsenic or tartar emetic which would cause congestion if they stayed in the mouth as they do in the stomach, all cause appetite. Perhaps they do this only by exciting a certain amount of congestion in it, for food itself causes the vessels of the mucous membrane to dilate and its glands to secrete in the same way as we have described after the injection of alcohol, and we all know that a person who begins a meal with no appetite at all often eats with zest after the first bite, and finishes with astonishment at the amount he has consumed. But if the irritation is too strong the whole condition becomes changed.[1] The mucous membrane loses its rosy hue and becomes pale, the secretion of gastric juice ceases while that of a slimy mucus is increased, appetite disappears and is replaced by nausea, and finally vomiting occurs. This change is often clearly seen in a so-called bilious attack, where the irritation of the stomach first manifests itself as an abnormal craving for food, which gives place as the irritation increases to nausea and vomiting.

Now the amount of irritation necessary to produce these totally different conditions of increased secretion with appetite and diminished secretion with nausea varies in different stomachs, and in the same stomach under different conditions. If the stomach is sensitive an irritation will cause nausea, which would only produce appetite if it were less irritable, and *vice versâ*, a sluggish stomach will be benefited by an amount of irritation which one normally sensitive could not bear. Thus we know that in some cases articles of food, such as lobster, which in normal stomachs frequently cause indigestion and nausea, are readily digested while ordinary food is not digested. The stimulus which an ordinary diet gives to the stomach seems here to be insufficient to excite the secretion of gastric juice, while the more irritating substances do so and are digested instead of causing over-irritation and vomiting as in the normal condition. But if this explanation be correct, how is it that we take a glass of spirits with our lobster "to digest it"? Is not this adding fuel to fire and increasing the irritating effect of the lobster on the stomach by that of the alcohol? By no means—the fibres of lobster are probably in themselves no more irritating than fibres of beef, but only less soluble in gastric juice, so that they retain their form and hardness instead of being reduced to a pulp, and by thus exerting for a longer time a mechanical irritating action upon the stomach they produce nausea and indigestion, not immediately after they have been swallowed, but in the course of some hours. If, however, an increased secretion of gastric juice be produced by means of a glass of spirits swallowed at the same time with the lobster, we may expect that digestion will take place more rapidly, the fibres will be dissolved, and the prolonged irritation of the stomach being avoided no nausea will ensue.

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[1] Bernard, *Archive d'Anat. Gén. et de Physiologie*, Jan. 1846, quoted by Power in Carpenter's *Physiology*.—Ed. p. 149.

If insufficient stimulation of the stomach then does not induce a flow of gastric juice, and if excessive stimulation causes nausea, under what circumstances is alcohol likely to be useful? Healthy stomachs with ordinary food do not require it, although in small quantities it may do little harm, and as an adjunct to lobster may be positively beneficial. A large quantity however is certain to be injurious. Moreover, if regularly used, even in small quantities, the stomach may become habituated to it, and refuse to respond to the stimulus of food alone, unless supplemented by that of alcohol. The case is different when we have to deal with a stomach whose sensibility is below par, either permanently or temporarily. In patients convalescent from an acute illness, or weak delicate anæmic persons, the food does not sufficiently stimulate the weakened stomach, the secretion of gastric juice is small, and the meal lies for a long time like a weight at the epigastrium. The same is the case with the merchant, the lawyer, or the doctor, who comes home from his counting-house, his office, or his rounds, and sinks exhausted into his easy-chair, weary and worn out by a long day's work. In such cases the diminished sensibility of the stomach must be compensated by an extra stimulus, and the glass of sherry which to a healthy person not exhausted by over-fatigue would be superfluous, will in them restore the normal equilibrium and quicken the otherwise slow and imperfect digestion.

I do not mean to discuss the wisdom of these men's conduct in thus exhausting their energies, or the question how long such a course can be pursued without ending in an utter breakdown, for it is in many instances sheer necessity which drives them to it, and no remonstrance or warning is of any use. But I would say a word about the amount of stimulants to be employed and the probable effect of excess on the stomach itself. Not only does the sensibility of the mucous membrane become blunted so that it no longer secretes gastric juice in proper quantities when stimulated by food alone, but it secretes mucus in large quantities, and this not only impedes digestion, but facilitates fermentation, by which various injurious substances are formed. Amongst these may be mentioned butyric acid, which causes an acrid burning sensation in the stomach itself, and may, according to Otto Weber and Senator, be absorbed into the blood and there act as a nerve poison, still farther reducing the business capacities of the unfortunate patient, which may already have been sadly diminished by over-work and inability to assimilate proper nourishment.

While then it may be very beneficial to take a moderate quantity of alcohol with meals, an excessive amount will be injurious to the stomach itself, not to mention its action on the nervous system.

In connection with this power of the stomach to adapt itself to the stimulus it ordinarily receives, I may mention that in one part of the Austrian empire the peasantry live almost exclusively on a mixture of oatmeal and water which is allowed to ferment and become sour. Although this diet would in all probability so irritate the alimentary canal of any ordinary person as to produce vomiting and diarrhœa, these people thrive upon it and are very strong and healthy. When the young men however enter the Emperor's army, and come to Vienna, where they get well-cooked food, they nearly all suffer from indigestion, lose flesh, and become weak and ailing—exactly the contrary of what one would have expected. Of course various explanations may be given of this fact, but I am inclined to believe that the indigestion is due to the well-cooked food being less irritating than the sour meal, and not sufficiently stimulating to the stomach and intestines accustomed to the other.

Alcohol taken into the stomach increases the movements of the organ as well as its secretion, and by mixing its contents more thoroughly with the gastric juice accelerates digestion. At the same time it causes the expulsion of gases, and a little brandy is one of the carminatives most commonly employed by those who suffer from flatulence. But in this respect also the stomach after a little while becomes accustomed to the stimulus, and those habituated to the excessive use of alcohol not only suffer from flatulence due to the processes of fermentation already mentioned, but are less readily relieved by the usual remedies.[1]

We now come to consider the effects which alcohol produces reflexly on other organs through the nerves of the stomach before it has actually been absorbed. The glow which is felt in the stomach after taking a glass of brandy diffuses itself so rapidly over the body that many authorities have considered that it could only do so through the nervous system. Others again believe that absorption takes place so rapidly that the warmth may quite well be, and is, due to the action of the alcohol on the heart and vessels after it has got into them. In this case, as in many others, it is probable that both parties are right, and the effect is due partly to the one cause and partly to the other. For if you wish to warm a man quickly who is shivering with cold you give him a glass of raw brandy, and you do not dilute it with a tumblerful of water. And yet, according to Dogiel,[2] the diluted spirit will be more quickly absorbed than the strong; and if the warming effect is produced by the alcohol only after it gets into the vessels the dilute spirit should act more quickly than the neat. The fact seems to be that the brandy at first increases the circulation and warms the man by acting reflexly on the heart and vessels through the nerves of the stomach,[3] and that afterwards the alcohol is very quickly absorbed into the blood, and keeps up the primary effect by its special action on the nervous system, and through it upon the circulation.

When a large dose of alcohol is swallowed at once, the person or animal very often falls down immediately in a state of perfect unconsciousness, and unless medical assistance be at hand may never awake. Sir Benjamin Brodie, who made several experiments on this point, attributed this condition to reflex action from the stomach upon the heart and vessels.[1] The irritation applied to the inside of the viscus by the alcohol had produced shock in very much the same way as a blow on the epigastrium would have done.[2] But when alcohol is injected into the veins the animals fall into much the same condition as when it is introduced into the stomach, and therefore several authorities have thought that Brodie's conclusions were wrong. They are, however, in great measure correct, for he found that a somewhat small dose of alcohol injected into the stomach of a cat knocked it down senseless, and in this condition it remained for about eight minutes. Then it recovered and walked about. There was no time here for the elimination or for the destruction of alcohol in the system, and consequently this effect which passed off so rapidly could not be due to the presence of the drug in the blood, and must be attributed to its action upon

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[1] In reference to congestion of the stomach as a cause of appetite *vide* Beaumont, *Experiments and Observations on the Gastric Juice and Physiology of Digestion*, and Buchheim's *Arzneimittellehre*, p. 42. On the secretion of gastric juice and the effect of alcohol upon it, *vide* Beaumont op. cit., Bernard *Physiologie Expérimentale*, vol. ii. p. 388, and Kühne, *Physiologische Chemie*, p. 28.

[2] Dogiel, *Pflüger's Archiv.*, vol. viii.

[3] Reflex contraction of the intestinal vessels probably occurs and drives the blood to the surface. Compare the experiments of Hermann and Ganz (*Pflüger's Archiv.*, vol. iii.), and of Meyer and Pribram (*Wiener Akad. Sitzungsber*, July, 1872), where cold drinks and mechanical irritation of the stomach raised the blood pressure, with those of Heidenhain (*Pflüger's Archiv.*, 1871, vol. iv. p. 1 to 119), where a rise in blood-pressure increased the flow of blood through the cutaneous vessels.

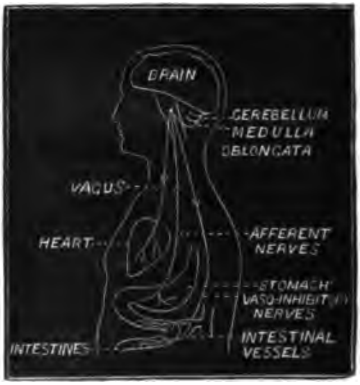

Fig. 16.—Diagram showing the reflex action on the heart and vessels of *large* doses of alcohol introduced into the stomach. The irritation produced by it is conveyed by the different nerves to the medulla oblongata, and thence by the vagus to the head, which it either slows or stops entirely. The mode of action on the intestinal vessels is not certain. It may simply arrest the normal action of the vaso-motor centre upon the intestinal vessels, or may be conducted down to them by vaso-inhibitory nerves, as represented in the diagram. In either case it will cause them to dilate.

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[1] Brodie, *Philos. Trans.*, vol. ci. p. 179.

[2] *Vide* the author's article on "The Pathology of Shock and Syncope," *Practitioner*, vol. xi. p. 243.

the stomach before absorption. But when larger quantities were given the animal did not recover in this short time. Then the primary shock lasted so long that before it passed off absorption had time to take place, the alcohol having found its way into the blood was carried by it to the nervous centres, acted upon them, and the shock passed into alcoholic coma.

While large doses thus paralyze the heart more or less completely, moderate doses stimulate it to act with increased rapidity, and at the same time with increased force. I consider this stimulating action upon the heart through the nerves of the stomach, even when no absorption has taken place, to be one of the most important properties of alcohol, for I believe it is reflexly in this way that we restore the circulation where it has nearly ceased by pouring a glass of brandy down a man's throat. When a person has been nearly drowned, or is dying from exposure to cold—when the pulse at the radial has ceased and the cardiac pulsations can hardly be perceived—we cannot imagine that absorption will go on very quickly from the stomach, and yet the good effects of the spirits we give quickly become evident.

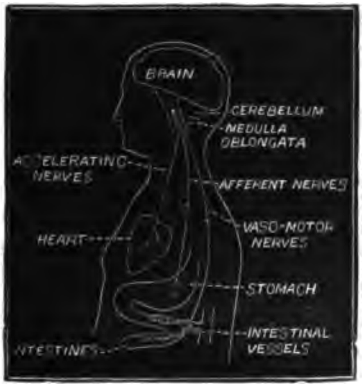

Fig. 17.—Diagram showing the reflex action upon the heart and vessels of *moderate* doses of alcohol. The irritation is conveyed to the medulla, as in Fig. 12, but instead of calling into action the vagus and vaso-inhibitory nerves, it excites the accelerating nerves of the heart, and probably the vaso-motor nerves of the intestines, thus increasing instead of diminishing the circulation in the body generally. This difference in the reflex action of large and small doses of alcohol upon the heart and vessels corresponds to the different action, already noticed, of slight and great irritation of the stomach, mechanical or otherwise—the slight stimulation increasing, and the great diminishing or arresting the circulation and secretion.

Having said so much regarding the local action of alcohol on the stomach and its reflex action upon the heart through the nervous system, let us consider the effects it produces after its absorption into the blood. It must be constantly borne in mind that these effects are independent of those which alcohol produces reflexly, and may be antagonistic to them; so that after alcohol has acted on the nerve-centres, it may prevent any farther reflex from the stomach.

Most authorities agree in saying that absorption takes place by the veins and not by the lacteals, but some consider it to occur chiefly in the stomach, others in the intestine. In all probability it occurs in both, and slight differences in the fulness of the stomach may alter the proportion taken up by it and by the intestine respectively. Strong alcohol injected directly into the blood causes coagulation, but this of course cannot occur when it is absorbed from the stomach. For if by any possibility it should enter the absorbing venous radicles in a concentrated state the coagulation it would there induce would at once bar its further progress.

It is therefore only with the action of more or less diluted alcohol on the blood and vessels with which we have to do. It acts on the white blood corpuscles by at first increasing and then diminishing their amœboid movements. What the effect of its action on the movements of the white corpuscles will be upon the body as a whole it is difficult to say, but the result of its action on the red corpuscles is more easy to trace. George Harley[1] and Schmiedeberg have found that it lessens their power of giving off oxygen, and must consequently more or less diminish the oxidation of the tissues. Now, both the functional activity of organs and the production of heat in the body depend on the process of oxidation within them, and it is obvious that any interference with these processes is not likely to be beneficial so long as they are going on in a healthy way, and not too rapidly. As we shall afterwards see, however, this effect is to some extent counteracted, or even more than counteracted, by the action of alcohol in accelerating the circulation, and if the quantity taken be small, and not frequently repeated, little or no harm will ensue. If it be frequently taken, however, by persons in average health, and with fair digestion, its effects will become manifest in the imperfect combustion of fat, and its consequent accumulation in the tissues. This seems to occur especially in the skin, which acquires a velvety feeling.

[1] *Proceedings of the Royal Society*, vol. xiii. 1864.

From this quality of the skin I have seen Professor Neumann of Vienna diagnose the potatory habits of a man whom one would otherwise never have suspected. If much saccharine or other fat-forming matters be taken at the same time with frequent doses of alcohol the subcutaneous tissue also becomes loaded with fat, as we so frequently see in brewers' draymen, and if the consumption of alcohol be excessive it causes fatty degeneration of various organs. This power of alcohol to lessen oxidation, useless or even injurious in health, increases the value which its other properties give it in the treatment of febrile diseases, where oxidation is going on too quickly, and rapidly destroying the tissues. The very increase of temperature which this oxidation causes helps of itself to accelerate the disintegration of the tissues, for a high temperature causes them to split up, even although they do not undergo oxidation. Thus the albuminous tissues probably become decomposed and yield urea, other nitrogenous substances, and fat. The fat does not undergo complete combustion but accumulates in the tissues from which it has been formed, and thus the heart of patients who have died of pyrexial diseases, instead of being purely muscular, is generally to a great extent fatty.

In such a condition of pyrexia alcohol will diminish the excessive waste in two ways. Firstly, it will impede oxidation, and secondly, by thus lessening the temperature, it will diminish tissue-disintegration.

But while alcohol thus modifies the blood, does it undergo no change itself? Does it simply course through the vessels for some time until it can be eliminated unchanged by the various emunctories, or does it undergo combustion in the blood as the grape sugar from which it is derived would do, and thus deserve like it the title of food?

Great numbers of experiments have been made to decide this question, and diametrically opposite opinions have been founded on them. Liebig classed it as a food along with sugar and starch, and no doubt was thrown on the correctness of this classification, until Lallemand, Perrin, and Duroy published their experiments, from which they concluded that alcohol is entirely eliminated in an unchanged condition, and can therefore in no sense be termed a food. Their conclusions, however, were much more general than their experiments warranted, and they did not pass unchallenged. What their research actually showed was not that the whole of the alcohol injected passed out of the body, but only that a part of it is excreted. Similar experiments were made by Baudot, who instead of using large doses used small ones, and he found that instead of the whole or a great part of the alcohol being excreted, only a small fraction, so small as to amount practically to nothing, found its way out through the kidneys. The question was then taken up by the late Dr. Anstie, who did much to solve it; and had he only lived to complete the researches on which he was engaged at the time of his death would have settled it completely. His experiments, as well as those of Thudichum, Dupré, and Schulinus, confirm Baudot's, and show that only a trifling fraction is eliminated. A year or two ago, Subbotin published some experiments, in which he found a much larger proportion of the alcohol to be excreted than the other observers just mentioned had done, but he, as well as Lallemand, Perrin, and Duroy, used very large doses. Now we all know that grape sugar is a most valuable food—the food we may say *par excellence* of the body, for others are converted into it in the liver—and in moderate quantities it undergoes complete combustion in the body, and is not eliminated in the urine. But a man may be rendered temporarily diabetic by giving him a large quantity of syrup at once, for the organism not being able to consume more than a limited amount at a time, the excess is thrown out by the kidneys. It is therefore not to be wondered at that alcohol should be excreted after large doses have been taken; in fact, the wonder would be if it were not.

The importance of the question whether alcohol undergoes oxidation in the body or not consists in this; if it is oxidized it will supply energy for muscular exertion, or for keeping up the animal heat, or for both, and will therefore be entitled to rank as a food, while if it is excreted unchanged it will have no claim to the name, and must be classed with such substances as the organic alkaloids, which after acting on the nervous and muscular systems, while they are circulating in the blood, pass out after a while by the emunctories. It is the merit of Baudot, Anstie, and others who have worked at this subject, to have shown that alcohol is oxidized, and is thus to be reckoned as a food and not merely as a drug. But still more satisfactory evidence of its claim to the title of food is afforded by the fact that it will keep up the weight of the body and prolong life when the supply of other food is insufficient or is entirely wanting.

Dr. Hammond found that when he took an insufficient diet and was daily losing weight, the addition of alcohol not only prevented this loss of weight, but converted it into an actual gain.[1] In his work on "Stimulants and Narcotics," Dr. Anstie has collected a number of cases in which persons have lived for a considerable time either upon it alone or along with a quantity of food so small as to have been utterly inadequate without it.

From a survey of all the evidence on this subject, I think we may conclude that in moderate doses alcohol undergoes combustion in the body, and will supply energy, yield warmth, and tend to sustain life in the same way that sugar would do, and is therefore to be reckoned as a food. At the same time it has a power of diminishing oxidation which prevents its employment as a food to any great extent in health, but greatly increases its utility in disease.

In feverish conditions it diminishes tissue waste, and thus keeps up strength in three ways:—1. It undergoes combustion itself as a food instead of the tissues. 2. It lessens oxidation in them. 3. It lowers the temperature which itself increases tissue degeneration. It may perhaps seem rather contradictory to say that it undergoes combustion and yet diminishes combustion, but in this respect we may compare it to the sulphur which some people are accustomed to throw into their grate when the chimney takes fire—the sulphur burns itself, but it puts out the blazing soot.

We now come to the action of alcohol upon the heart and vessels, and in order to prevent any complication from the reflex action of which we have already spoken, let us suppose that instead of pure brandy dilute spirits or some light wine has been taken, which will have little or no irritating effect upon the gastric mucous membrane. One of the best possible opportunities of studying the earlier and slighter effects of alcohol is afforded by a public dinner. If we look at our own hands or those of our neighbours before going in, especially if the ante-room is somewhat cold, we may find them somewhat pinched-looking; the colour somewhat dusky and distributed in patches instead of being uniform; the veins very thin, almost like threads. They are of a somewhat dark blue colour, and on emptying them by pressure they fill very slowly, showing that the circulation is languid. After a few glasses of wine, however, their appearance begins to change. The hands now assume a uniform rosy tint, showing that the capillaries are now dilated and filled with bright arterial instead of dark venous blood; the veins swell up, become prominent, of a light blue colour almost like arteries, and when emptied by pressure fill rapidly, showing that the circulation has become very quick, and that they, like the capillaries, are now filled with blood which is tolerably bright, if not quite arterial, instead of the dark blood they previously contained. The hands entirely lose their shrunken look, little wrinkles in the skin disappear, indeed the hands become larger than usual, or, as my neighbour at a dinner-table one expressed it, they become "podgy," from the amount of blood and intercellular fluid in the vessels and tissues; and rings previously loose become almost too tight. This dilatation of vessels, so readily seen in the hands, is not confined to them, but occurs generally throughout the body. The warm blood pouring from the interior of the chest and abdomen over the surface imparts to it a pleasing glow, and a most agreeable feeling of comfort pervades the whole frame. The face shares the general flush, and the pulsation of the temporal arteries not unfrequently becomes easily visible. The current of blood throughout the body is more rapid than before, and this rapidity does not depend simply on the dilated vessels offering less resistance to the current of the blood. No! the alcohol has stimulated the accelerating nerves of the heart, which cause it to pulsate not only more rapidly but more powerfully, so that in animals, despite the dilatation of the vessels, the pressure has been found to rise in the arteries.[1] Here we have one at least of the most important conditions for the nutrition of all the tissues. The slight diminution in the oxidizing power of blood which alcohol occasions is many times over compensated by the amplitude of its current, and, as this is flowing rapidly through the tissues, bringing them new food and carrying off their waste products, is it any wonder that they work with more than usual vigour? The muscles acquire new strength; the work which previously fatigued them is done with ease; the mental faculties become much more acute, and new ones, previously unsuspected, may even appear. The merchant will be able to drive a harder bargain, the student will solve the problem which previously baffled him, the man who tries with difficulty to speak in a foreign language finds his stammering disappear and his tongue run on with ease, the melancholy man may sing a merry ditty, and the sedate man, whom no one would ever have suspected of such a thing, may succeed in making an excellent joke.

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[1] Hammond's *Physiological Researches*, p. 55.

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[1] Dogiel, *Pflüger's Archiv.*, vol. viii. p. 605.

Provided the liquor has been good, or, in other words, provided the alcohol employed has been free from all injurious admixture, all these effects, I believe, may be produced, and may pass away without any bad effects.

In the preceding lines I have sketched the action of alcohol in its fairest aspect, but its effects are not always so pleasant; for not a few persons, instead of becoming more bright, lively, active, and intelligent after taking a little alcohol, become heavy, sleepy, and stupid. These different effects are partly dependent on the different constitution of the individuals, and partly on the quantity and kind of the alcoholic beverage. We find that the same differences exist in the effect of walking exercise upon the mental powers. Exercise, like alcohol, both dilates the vessels and increases the action of the heart. The mental processes of some persons go on very slowly when they are walking, and if they are asked a question they stand still to think and answer it.[1] They can think still better when they sit, and their brains are perhaps yet more active if they lie down. Others, again, do their brain-work more easily when walking about, and so instead of remaining at their desk they pace the room incessantly while thinking, and only take the pen in their hand when they are ready to write. At first sight, it seems odd that the conditions most favourable for thought should be so different in two persons, and yet when we come to examine them more closely we find that both persons, in different ways, are seeking the same thing, viz. a fuller supply of blood to their brains. Position has a good deal to do with this, the head receiving more blood when it is lowered than

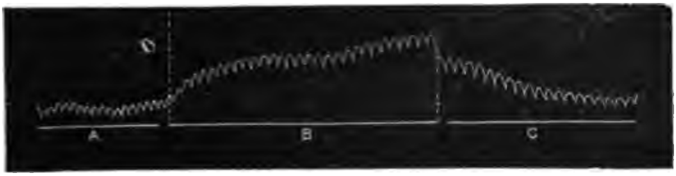

Fig. 18.—Tracing showing the increased circulation in the brain caused by inclining the head and body forwards. The tracing was taken by Brissaud and François-Franck, from the parietal region of a woman who had lost a large piece of bone from syphilis.—*Marey's Travaux for* 1877, p. 147.

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[1] It must be remembered that the effects here discussed may be due in great measure to diversion of nervous energy (*vide* the author's article on "Inhibition Central and Peripheral," *West Riding Asylum Reports*, vol. iv. p. 210), and not entirely to altered distribution of blood.

when it is high. Almost every one unconsciously shows this by bending forward instead of sitting upright when engaged in lively conversation, and more especially in debate, when the greatest possible mental activity is desired.[1] The influence of position also makes itself felt, in the kneeling posture—for example, during prayers in church, where sometimes, very much against the will of the individual, thoughts utterly unconnected with the devotions in which he appears to be engaged whirl through his brain, new projects are formed and problems solved with a rapidity surprising to himself. In some persons whose blood-vessels are lax, either from natural constitution or in consequence of debility or exhaustion, the recumbent posture, which allows a free current of blood to the head, is the most favourable for thought.[2] Now both exercise and alcohol have the effect of dilating the vessels, and, at the same time, of increasing the action of the heart. In some persons the relaxation of the blood-vessels caused by exercise is greater than the stimulation of the heart, so that, although this organ is beating somewhat more vigorously, the dilated vessels of the body draw away the blood and leave the brain more anæmic than before. Consequently such persons do not think so well while walking, and they may be rendered rather stupid than lively by alcohol. Others again, in whom stimulation of the heart is more easily induced than relaxation of the vessels, either by exercise or alcohol, so that the rapid and powerful cardiac pulsations increase the current of blood to the brain more than the dilated vessels can diminish it, think well while walking about, and have their mental power increased by alcohol.

A moderate quantity of alcohol may thus enable a man to overcome a sudden difficulty, but can its effects be kept up so as to help him with a prolonged effort? Does the alcohol supply new strength, or does it merely enable a man to use up his reserve of energy? If it really supplies strength we ought to find it doing so each time it is administered; but if it merely helps to use up reserve energy, we will find that each successive time it is given the organism responds less and less readily to the call, just as a man gives more and more grudgingly at each successive demand upon his purse. Now the question was thoroughly tested during the Ashanti campaign, and the following are the results as recorded by Professor Parkes:[1]—

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[1] This statement is well illustrated by the tracing (Fig. 18), which here accompanies it, but which was not published until a year after this paper.

[2] This is, however, often interfered with by some other factor, possibly some reflex action from the skin of the head, which induces sleep in this position.

"The first effect of alcohol, when given in a moderate dose (for example, what is equal to one fluid ounce of absolute alcohol), is reviving, but this effect is transient. The reviving effect goes off after at the utmost two and a half miles of additional march, and sometimes much before this; then the previous languor and sense of exhaustion not only return, but are sometimes more intense, and if alcohol is again resorted to, its effects are now less satisfactory. Its reviving power is usually not so marked, and its peculiar anæsthetic and narcotising influence can often be distinctly traced. The men feel heavy, dull, disinclined to march, and are less willing and cheerful."

From this it is evident that alcohol does not impart strength, but rather enables a man to use up in a short time the energy which he usually would have taken a much longer time to expend. If he only requires to make a single effort and can rest afterwards until he has replaced his exhausted store, the additional temporary strength obtained by using alcohol may enable him to overcome an obstacle which would otherwise have baffled him, but if he has to make prolonged exertions alcohol is injurious.

Now the heart seems to be affected by alcohol in the same way as the body generally. No new strength is imparted to it, but it is enabled to draw on its reserve. Thus Parkes has found that when brandy is given to healthy men the pulse becomes quicker, but after the effects of the brandy have passed off it becomes slower than natural, so that the number of pulsations and amount of work done by the heart in twenty-four hours is much the same whether brandy have been taken or not, unless the doses be large and repeated.[2]

The question therefore at once arises,—Is alcohol only useful in stimulating the heart to do additional work, and thus averting the danger of failing circulation for a short time only, or can it be used in diseases where this danger is to be averted for days, and even weeks, together? Before attempting to answer this question, I would remind you that a heart which is beating more quickly than usual wears itself sooner out than one which is acting slowly. It has been found that a heart which has been made to pulsate slowly for some time by irritation of the vagus, will continue to beat for a good while after it has been removed from an animal's body; while, on the contrary, it very soon ceases to beat if the vagi, instead of being irritated, have been cut, so as to allow the pulsations to be very rapid for some little time before the animal's death.[1] What is observed in these excised hearts is only an exaggerated representation of what occurs in the body, and although in it the pulsations may continue days instead of minutes, yet the final result will be similar. If alcohol always quickened the pulse in disease as it generally does in health it would probably be injurious in prolonged illness, as it was found to be in prolonged exertions by the soldiers in Ashanti. But this is not the case, for in fever the quick pulse frequently becomes slower after the administration of alcohol, and, indeed, an excellent rule of practice is not to give alcohol if it increases the rapidity of the pulse already too quick. Alcohol thus economises the vital power of the heart, and tends to prevent death from exhaustion. It is difficult to say precisely how the slowing of the pulse is effected. Probably it is due partly to stimulation of the vagus, for alcohol stimulates this nerve as well as the accelerating nerves of the heart, and partly to the alcohol increasing the power of the weakened vasomotor centre, either by acting upon it directly or by increasing the supply of blood to it, and thus giving greater tone to the vessels and raising the pressure in them. It may be also partly due to the action of the alcohol in lowering temperature. For heat is a stimulant, and cold is a sedative to the ganglia of the heart both in and out of the body, and other things being equal, its pulsations will be quick or slow according as the temperature is high or low.[2] And just as hearts which have been beating quickly in consequence of division of the vagi, soon lose their vitality, so do hearts which have been pulsating rapidly in consequence of heat, soon cease to beat, while those which have been exposed to a lower temperature and have been beating more slowly, retain their vitality for a considerable time.[3]

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[1] *On the Issue of a Spirit-Ration during the Ashanti Campaign of* 1874, p. viii.

[2] Parkes, *Proceedings of the Royal Society*, No. 150, 1874, p. 190.

The power of alcohol to reduce the animal heat is assisted by its property of diminishing oxidation, but is chiefly, no doubt, due to its action upon the vascular system. As I have already mentioned, it produces a rosy flush and a glow on the skin by dilating the cutaneous vessels and allowing the warm blood from the interior of the body to circulate freely through them. This agreeable warmth is popularly believed to be due to increased production of heat in the body, and persons leaving a warm room for a cold walk or drive will often take a glass of spirits "to keep out the cold." But alcohol instead of really heating the body, only warms the skin at the expense of the heart, lungs, and intestines, and so really lets in the cold to these organs from which nature tries hard to exclude it. For, in a healthy man external cold causes all the vessels of the skin to contract, so that very little blood flows through them, or none at all. The skin itself thus becomes cold and blue, but the deeper structures retain their normal warmth, for heat passes from them to the skin very slowly indeed by simple conduction, and it is the circulation which maintains among them an equality of temperature. When alcohol is taken, however, this arrangement is disturbed, the cutaneous vessels instead of contracting become dilated, and the blood pouring through them warms the cold skin comfortably. But in doing this it loses heat itself; it returns to the heart at each revolution a little colder than it left it; soon the temperature of the whole mass of blood and of the internal organs becomes reduced, and the last state of that man is much worse than the first. Where men are subject to great and prolonged exposure to cold, experience has taught them the danger of taking spirits while the exposure continues. My friend Dr. Fayrer told me that when crawling through the wet heather in pursuit of deer on a cold day, he offered the keeper who accompanied him a pull from his flask. The old man declined, saying, "No, thank you, it is *too cold.*" The lumberers in Canada who are engaged in felling timber in the pine forests, living there all winter, sleeping in holes dug in the snow, and lying on spruce branches covered with buffalo robes, allow no spirits in their camp, and destroy any that may be found there. The experience of Arctic travellers on this subject is nearly unanimous; and I owe to my friend Dr. Milner Fothergill an anecdote which illustrates it in a very striking way. A party of Americans crossing the Sierra Nevada encamped at a spot above the snow line, and in an exposed situation. Some of them took a good deal of spirits before going to sleep, and they lay down warm and happy; some took a moderate quantity, and they lay down somewhat but not very cold; others took none at all, and they lay down very cold and miserable. Next morning, however, those who had taken no spirits got up feeling quite well, those who had taken a little got up feeling cold and wretched, those who had taken a good deal did not get up at all, they had perished from cold during the night. Those who took no alcohol kept their heart warm at the expense of their skin, and they remained well; those who took much warmed their skin at the expense of their heart, and they died.

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[1] Czermak and Piotrowsky, *Wiener Akad. Sitzungsberichte*, xxv. p. 431.

[2] Panum, *Bibliothek für Lager*, Bd. xi. p. 468, and Schmidt's *Jahrb.* 1858. For other references, and for some original experiments on this subject, see the author's article on "The Influence of Temperature on the Mammalian Heart, and on the Action of the Vagus," *St. Bartholomew's Hospital Reports*, vol. vii.

[3] Panum and others, op. cit.

But while alcohol is thus injurious during prolonged exposure to cold, the case is very different after the exposure is over, and its administration may then be very beneficial. Supposing a man after being out all day comes home much chilled to a warm fireside. He stands before the grate and turns himself round and round, but he cannot get himself warmed through. The cutaneous vessels so long contracted by the cold will not relax all at once, and the deeper tissues gain heat very slowly, just as they lose it very slowly, by mere conduction through the skin. If a little spirits be now taken, and especially if it be taken hot, the cutaneous vessels dilate, allow the blood to circulate through them and become warmed by the fire, it returns warm to the internal organs and soon the whole body is in a pleasing glow. At the same time the dilatation of the cutaneous vessels opens new channels to the blood which has been pent up in the interior of the body, and thus lessens any tendency to congestion or inflammation of internal organs, so that a glass of hot brandy and water at the proper time may possibly prevent a bronchitis or pleurisy. Here I may just mention that although alcohol during continued exposure is generally injurious, yet in some instances where pain or cramp in the internal organs seem to indicate more risk from their engorgement than from diminution of the general temperature of the body, it may be beneficial, even while the exposure continues.

The dilatation of the vessels produced by alcohol has other consequences than equal distribution of heat between the surface and interior, for the dilatation does not occur equally in every vascular district. Generally the vessels of the brain are especially dilated, as is seen both from the mental activity usually manifested, and from direct observation of the vessels themselves; but sometimes those of other parts, probably those of the intestines, would seem to be more particularly affected, and the blood being thus drained away from the brain, it becomes anæmic and sleep ensues.

We have now to consider the effects of alcohol when given in such quantities as to evidence its poisonous qualities and produce intoxication. Excepting when the dose is so excessive as to produce shock, the symptoms of intoxication are always preceded by those of stimulation already described. It is (as I have already observed) very difficult to say how far the stimulating action depends on the increased circulation through the nervous centres only, or how much of it may be due to the action of the alcohol on the nervous structures themselves. The symptoms of intoxication must, however, be referred to a paralysing action of the alcohol on the nerve centres, for although as intoxication progresses a diminution in the activity of the cerebral circulation occurs, and the well-nourished brain becomes anæmic, this alone is insufficient to acount for the effects we observe. The first of these are weakening of the mental faculties and of the power of co-ordination. The higher faculties seem to go first, and a man's judgment becomes impaired while his memory and imagination are still more lively than usual. Then these faculties diminish and the emotions become more prominent, so that a man is either ready to swear eternal friendship all round, or becomes as anxious for a fight as an Irishman at Donnybrook; is gay, mirthful, and hilarious, or subdued and lachrymose, melting into a flood of tears without any apparent cause.

At the same time that the cerebral faculties are disappearing one after another, the power of co-ordination becomes impaired. This is most evident in the tongue and legs, the speech becoming thick and indistinct, so that the pronunciation of the words "British Constitution" becomes next to an impossibility, and locomotion becomes staggering and uncertain. Although loss of the mental faculties and loss of co-ordination power generally go hand-in-hand, yet either of them may occur a good while before the other, so that persons who seem stupefied by drink may rise and walk with the utmost steadiness, while others who seem perfectly unaffected while sitting and can discourse on any subject with freedom will find great difficulty in steering their way from the table to the door. In popular language, one man is said to be drunk in his head and another in his legs. It is not, however, the legs that are in fault, as the drunk man himself well knows, but the nervous apparatus that directs them, and this in all probability is the cerebellum, as Flourens supposed it to be. This physiologist found that when he sliced away the cerebellum bit by bit the animals walked exactly as if they were drunk,[1] and on the other hand, when he examined the cerebellum of drunk animals he always found it to be congested. The researches of my friend Professor Ferrier render it all the more probable that the cerebellum is the nervous centre on which this loss of locomotory power depends, for he has found it to be the centre for regulating the movements of the eyes and co-ordinating the motions of the body with them. Now double vision is one of the most marked symptoms of alcoholic intoxication, and the staggering of a drunk man seems to be dependent on erroneous conceptions of the position of surrounding objects, for he not unfrequently vehemently asserts that he is perfectly steady but everything else is drunk, and all his troubles are owing to an ill-disposed lamp-post which went out of its way to bump him, or an evil-minded pavement which rose up and hit him on the nose.

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[1] *Propriétés et Fonctions du Système Nerveux*, p. 327.

The cerebrum and cerebellum are thus the first parts of the nervous system to suffer, and even after their functions are completely abolished the spinal cord will perform its functions, and a man incapable of thinking, speaking, or walking, will be able to ride, the impression made on his legs by the saddle causing reflex contraction of his adductors and enabling him to sit tolerably firmly although the upper part of his body may be swaying helplessly about. At this time, however, the reflex action of the nerve centres regulating the heart's vessels is much impaired or almost entirely abolished,[1] and herein is one source of safety to the drunk man. For sometimes a person in this condition may be seen riding furiously along a road, the horse swerves or turns a corner quickly and the rider is pitched forcibly off. The bystanders rush up expecting to find him dead, but no, beyond a severe bruise or two, and perhaps some tear or cut, he is nothing the worse. The fall which would have killed a sober man has not hurt the drunk one, for the alcohol has paralysed the nervous apparatus,[2] through which shock would otherwise have been produced.[3] The medulla oblon-

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[1] *Vide* Dogiel, *Pflüger's Arch.* viii.

[2] *Practitioner*, vol. xi. p. 250.

[3] Leslie Stephen tells the following anecdote regarding a guide which illustrates this subject:—

"Michel was one day descending from the well-known path which leads from the so-called Eismeer to Grindelwald in an unduly convivial frame of mind. Just above the point where mules are generally left, the path runs close to the edge of an overhanging cliff, the rocks below having been scooped out by the glaciers in old days when the glacier was several hundred feet above its present level. The dangerous place is guarded by a wooden rail, which unluckily terminates before the cliff is quite passed. Michel, guiding himself as it may be supposed by the rail, very naturally stepped over the cliff when the guidance was prematurely withdrawn. I cannot gata continues its functions after the cord has ceased to act, but by and by it also succumbs; and if the dose be sufficiently large the respiration becomes weaker and weaker, and finally death ensues.

The motor ganglia of the heart are also weakened by the action of alcohol upon them, but, in general, death is due to stoppage of the respiration, and not of the circulation, except in cases where shock has been produced by enormous doses of alcohol swallowed at once.

To resume, the chief points in this paper are:—

1. Alcohol, in small quantities, increases the secretion of gastric juice and the movements of the stomach, and thus aids digestion. Although unnecessary in health, it is useful in exhaustion and debility.

2. It increases the force and frequency of the pulse, by acting reflexly through the nerves of the stomach.

3. In large doses it impairs digestion by over-irritating the stomach.

4. It may produce death reflexly by shock.

5. After absorption into the blood, it lessens the oxidising power of the red blood corpuscles. This property renders it useful in reducing temperature; when constantly or very frequently present in the blood, it causes accumulation of fat, and fatty degeneration of organs.

6. It undergoes combustion in the body, maintains or increases the body weight, and prolongs life on an insufficient diet. It is therefore entitled to be reckoned as a food.

7. If large doses be taken, part of it is excreted unchanged.

8. It dilates the blood-vessels, increases the force and frequency of the heart by its action on the nervous centres to which it is conveyed by the blood, imparts a feeling of comfort, and facilitates bodily and mental labour. It does not give additional strength,

state the vertical height through which he must have fallen on to a bed of hard uncompromising rock. I think, however, that I am within the mark in saying that it cannot have been less than a hundred feet. It would have been a less dangerous experiment to step from the roof of the tallest house in London to the kerbstone below. Michel lay at the bottom all night, and next morning shook himself, got up, and walked home sober, and no broken bones. I submit two morals for the choice of my readers, being quite unable, after much reflection, to decide which is the most appropriate. The first is: Don't get drunk when you have to walk along the edge of an Alpine cliff; the second is, Get drunk if you are likely to fall over an Alpine cliff." *The Playground of Europe*, p. 87.

but merely enables a man to draw upon his reserve energy. It may thus give assistance in a single effort, but not in prolonged exertions.

9. The same is the case with the heart; but in disease alcohol frequently slows instead of quickening the pulsations of this organ, and thus economises instead of expending its reserve energy.

10. By dilating the vessels of the skin, alcohol warms the surface at the expense of the internal organs. It is thus injurious when taken during exposure to cold, but beneficial when taken after the exposure is over, as it tends to prevent congestion of internal organs.

11. The symptoms of intoxication are due to paralysis of the nervous system; the cerebrum and cerebellum being first affected, then the cord, and lastly the medulla oblongata. It is through paralysis of the medulla that alcohol usually causes death.

12. The apparent immunity which drunken men enjoy from the usual effects of serious accidents is due to paralysis of the nervous mechanism, through which shock would be produced in a sober condition.

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ON THE PHYSIOLOGY OF VOMITING AND THE ACTION OF ANTI-EMETICS AND EMETICS.

('*The Practitioner*,' VOL. XIII. p. 409, Dec. 1874.)

THE act of vomiting consists in the forcible expulsion of the contents of the stomach through the œsophagus and mouth. It may seem almost unnecessary to mention the œsophagus at all, for anything passing from the stomach to the mouth must needs do so through the œsophageal tube. And yet this fact is not always borne in mind, and the active share which the œsophagus takes in producing emesis being forgotten, a false conception of the mechanism of vomiting is formed. For a long time opinions were divided regarding the part taken by the stomach in the expulsion of its contents. Some stated that this was chiefly effected by the active contractions of the gastric walls. Others affirmed that the stomach was entirely passive, and was merely emptied by the mechanical pressure exerted upon it by the simultaneous contraction of the diaphragm and abdominal muscles. It has now been shown that the first view is incorrect, and that the movements of the stomach cannot expel its contents[1] except in rare instances.[2] Vomiting consists essentially in the simultaneous contraction of the abdominal muscles and diaphragm, which press on the stomach so as to squeeze out its contents. When these muscles are prevented from acting, either by cutting them across or by paralysing them with woorara, vomiting does not occur, although the stomach may be moving actively.

On the other hand, vomiting may be produced by the contraction of the diaphragm and abdominal muscles, although the stomach remains perfectly quiet, and even when it is replaced by a simple bag. This was shown by the well-known experiment of Magendie.[1]

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[1] Magendie, *Mémoire sur le vomissement*, p. 23; Gianuzzi, *Centralblatt der med. Wissenschaften*, 1865, p. 3.

[2] Budge, *Die Lehre vom Erbrechen*, p. 34.

This physiologist removed the stomach of a dog and attached a pig's bladder filled with fluid to the œsophagus in its place. He then injected tartar emetic into the veins of the animal, and found that vomiting occurred in the same way as if the stomach had been *in situ.* He noticed, too, that vomiting could be produced by the contraction of the diaphragm alone, after the whole of the abdominal muscles had been cut away, the linea alba only being left,[2] and also, though imperfectly, by the contraction of the abdominal muscles alone, after the diaphragm had been rendered nearly motionless by section of the phrenic nerves.[3] In ordinary vomiting, however, the diaphragm and the abdominal muscles co-operate together.

But it is quite evident that in vomiting there is something more than mere pressure of the stomach between the diaphragm and the abdominal muscles. In severe coughing the stomach is squeezed violently, but its contents are not usually expelled. The reason of this is, that in coughing the œsophagus remains firmly contracted, and prevents anything escaping from the stomach. In the act of vomiting, on the contrary, the œsophagus relaxes, and allows the gastric contents to pass freely through it.[4] In vomiting, therefore, there are two factors, viz. (1) pressure on the stomach; (2) a relaxed condition of the œsophagus, especially at its under end, just where it joins the stomach. This under end is sometimes called the cardiac sphincter of the stomach, although there does not appear to be any distinct band of fibres thicker than the rest at this point, as the name would imply.[5]

If either factor be wanting, vomiting will not take place. The relaxation of the sphincter is of no use if the muscles do not contract, and they will exert themselves in vain if the cardiac sphincter remain contracted. This is seen in retching, which sometimes occurs without vomiting, even when the stomach is tolerably full.

The relaxation of the cardiac sphincter is effected by contraction of the longitudinal fibres which run along the under end of the œsophagus below the diaphragm, and then radiate obliquely over the stomach. When these contract, they draw the cardiac end of the stomach nearer to the diaphragm, and at the same time dilate the cardiac orifice.[1] When they are paralysed, vomiting becomes impossible. If their innervation be disturbed, so that they do not work in concert with the diaphragm and abdominal muscles, vomiting will occur only rarely, or not at all; for in such a case when the abdominal muscles contract, the cardia will probably be closed; and when the cardiac orifice is open, the abdominal muscles will probably not contract.[2] Thus, neither action is of any use, and it is only when, by some accident, they happen together, that vomiting takes place.

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[1] Magendie, op. cit., p. 19.

[2] *Ibid.* op. cit., p. 23, and Budge, *Die Lehre vom Erbrechen*, p. 43.

[3] *Ibid.* op. cit., p. 21.

[4] Schiff, Moleschott's *Untersuchungen*, Bd. x. p. 378.

[5] Gianuzzi, *Centralblatt der med. Wiss.*, 1865, p. 3.

It would be difficult for the muscles to exert any great pressure on the stomach if it were nearly or quite empty, but they will do so effectually if it be full. For this purpose it will not matter very much whether it is filled with food or air; and so it seems that both animals and men swallow air before vomiting. The emptier the stomach, the more air do they require in order to distend it, and the oftener do they swallow air. But it is impossible to swallow air alone; saliva must be swallowed at the same time. The ordinary secretion of saliva would probably be insufficient for this purpose, and we generally find that vomiting is preceded by such profuse salivation as will enable many swallowing movements to be made rapidly one after another.

When the stomach is very full, vomiting is somewhat difficult, for the organ then turns forward in such a way as to form a fold at the lower end of the œsophagus, and thus partially prevent the exit of its contents. Vomiting never occurs in the horse or rabbit, and rarely in guinea-pigs. This is probably due to the great length of that part of the œsophagus which lies between the diaphragm and stomach, so that the contraction of the longitudinal fibres causes it to fold and obstruct the cardiac orifice instead of opening it as in other animals.

The phenomena of vomiting may be thus described. Uneasiness is felt; the inspirations become deeper; several swallowing movements are made which sometimes carry down sufficient air to distend the stomach moderately. After several deep inspirations there suddenly comes one which is deeper still. Then, instead of this being followed by expiration, the glottis shuts to prevent the escape of air, the diaphragm contracts still more, thus descending more deeply into the abdomen, and pulling the ribs together; the abdominal muscles forcibly contract; the left half of the stomach is drawn upwards,[1] and the cul-de-sac flattened out; the cardiac orifice dilates, and the contents of the stomach are forcibly expelled. The pylorus remains firmly contracted, and allows but little to escape into the intestines. The closure of the pylorus has been ascribed by Budge,[2] partly to mechanical compression by the liver, which is pushed down upon it by the diaphragm, and partly to contraction of its muscular fibres induced by the irritation of the pressure. It seems more probable, however, that the contraction of the pylorus is not due to any local cause, but is regulated, like that of the other muscles, by the nervous centre which presides over the act of vomiting.

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[1] Schiff, op. cit., p. 380.

[2] *Ibid.* p. 399.

This centre is situated in the medulla oblongata, and it is identical with, or closely connected with, the nervous centre which regulates respiration. It is connected with the abdominal muscles, the diaphragm, the stomach, and the œsophagus, by the intercostal, phrenic, and pneumogastric nerves respectively. Along these it sends tho motor impulses which make the muscles contract and produce vomiting. For the sake of simplicity these nerves have not been represented in the diagram.

The nervous centre for vomiting is supposed to be closely connected or identical with the respiratory centre in the medulla oblongata. The reasons for this supposition are (1) that the movements of vomiting are excessively great and somewhat modified respiratory movements, and (2) that emetics excite the respiratory centre, while depression of the respiratory activity stops vomiting. Usually it is easy, by vigorous artificial respiration, to saturate an animal's blood with oxygen, and then, having no longer any need of fresh air, it ceases to breathe for a while; and any person after taking a few deep breaths will find that he can hold his breath a much longer time than before. The condition in which no respiration is needed, and consequently no movements of breathing are made by the animal, is termed *apnœa* by the Germans, while we use the same term to signify an aggravated condition of dyspnœa. I use the term in its German sense. If emetics are injected into the veins, the respirations become more frequent; and it is stated by Hermann and Grimm, that no apnœa can be produced by the most vigorous artificial respiration. And on the other hand, the artificial respiration prevents the occurrence of vomiting so long as it is continued.[1] This seems to indicate that the respiratory and vomiting centres are closely connected, and it is by no means improbable that some of the nerve cells and fibres which compose the respiratory centre in the medulla oblongata also form part of the centre for vomiting. Yet the movements of respiration and vomiting, although somewhat alike, differ very considerably from each other; and we are, I think, justified in supposing that the centres for respiration and vomiting are not absolutely identical,[2] although a part of each may possibly be common to both. Moreover, the centre for vomiting may be completely paralysed by narcotics, such as opium, chloral, or chloroform, while the respiratory movements continue or may even be increased.[3] I have also found that in chloral narcosis it is easy to produce apnœa after tartar emetic has been injected into the blood and sulphate of zinc into the stomach. This could hardly be the case if the centres for respiration and vomiting were identical. I shall therefore speak of them as distinct.

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[1] Schiff, op. cit., p. 362.

[2] Budge, *Die Lehre vom Erbrechen*, p. 49.

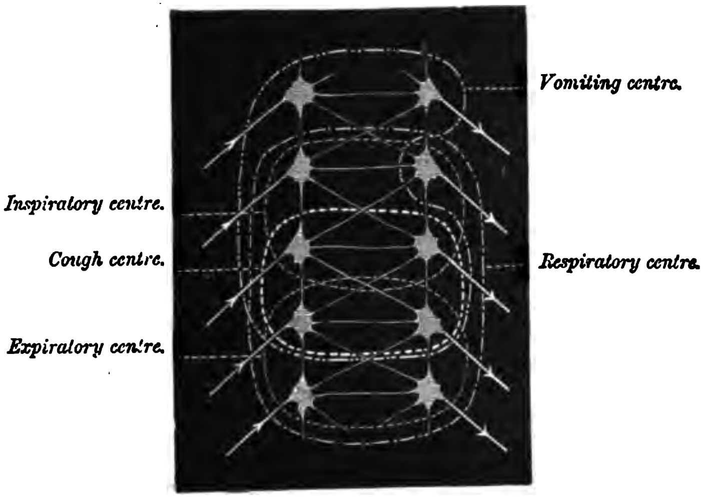

Fig. 19.—Diagrammatic representation of various groups of ganglion cells or "centres" in the medulla oblongata. The arrows indicate the directions in which the nerve-currents pass. Those pointing to the cells indicate sensory nerves, those pointing from the cells indicate motor nerves.

The nervous centre for vomiting is usually excited to action reflexly by irritation of certain afferent nerves. They may be divided into two classes: (*a*) those which pass upwards from the body to the medulla, and (*b*) those which pass downwards to it from the brain. It is easy enough to allot a few nerves to one or the other of these classes, but there are many others which we cannot with certainty place in either division. Thus, the pharyngeal branches of the glosso-pharyngeal nerve pass upwards to the medulla and act upon it independently of the brain, for tickling the fauces will produce vomiting in a man whose cerebral faculties are so besotted with alcohol that he hardly feels blows or bruises which would cause him severe pain when sober. On the other hand, the nerves of taste and smell only act on the vomiting centre through the brain, for persons in the mesmeric sleep will drink the most nauseous mixtures with a smiling face, while the very remembrance of disgusting tastes, sights, and odours would make them sick in their ordinary waking condition. But we cannot so readily say how the vomiting centre is excited by those nerves which convey painful impressions from various parts of the body. Severe pain will often cause nausea and vomiting, although the pain may originate in the most various parts of the body. Thus, a person suffering from a loose cartilage in the knee-joint tells me that the pain it occasions always brings on nausea and vomiting. A painful wound may produce a similar effect, and Helmont[1] relates that after dislocating a joint, nausea and vomiting came on, and lasted until the bones were replaced. A blow on the testicles, an inflamed ovary, and the passage of a calculus along the gall-duct and ureter, all cause pain and often vomiting. Some say that the vomiting is due to the pain, and that it only lasts while the pain continues, the pressure of the calculus and the irritation it thereby causes having nothing to do with it. It may be the case, then, that the irritation of the nerves of a limb in the case of a loose cartilage or a dislocation, of the hepatic and renal nerves in the case of a calculus, and of the intestinal, ovarian, and other nerves, all act through the sensory portions of the brain; but it is not yet certain that they do so, and it is so much more convenient to represent them as going direct to the medulla, than as going round to it *viâ* the cerebrum, that I have given them a direct course in the accompanying diagram. In it I have represented the following as the afferent nerves which pass up directly from the body to the medulla oblongata, and excite to action the vomiting centre situated there:

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[1] Grimm, *Pflüger's Archiv*, iv. p. 205.

[2] Harnack, *Arch. f. exp. Path. u. Pharmakol*, ii. p. 285.

[3] *Ibid.*

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[1] Quoted by Budge, op. cit., p. 15.

—Pharyngeal branches of the glosso-pharyngeal; pulmonary branches of the vagus; gastric branches of the vagus; gastric branches of the splanchnic; hepatic branches of the splanchnics (of the vagus ?); renal nerves; mesenteric nerves; uterine nerves; ovarian nerves; vesical nerves.

Those fibres which are represented as passing down from the brain may indicate the path by which the vomiting centre is excited by impressions of sight, taste, smell; by simple recollections or imaginations; by blows on the head, or inflammation of the brain or its membranes.

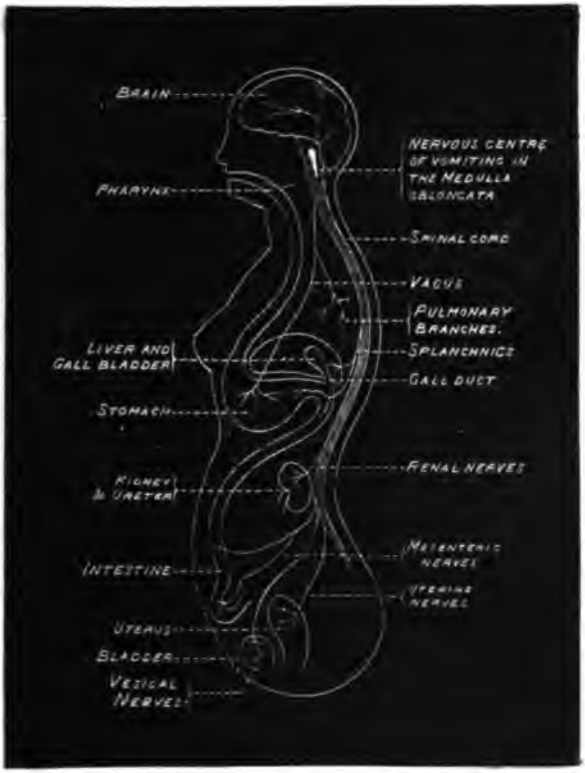

Fig. 20.—Diagram showing the afferent nerves by which the vomiting centre may be excited to action.

After this general description, we will proceed to examine these nerves more particularly.

They are—1. The branches of the glosso-pharyngeal nerve, distributed to the soft palate, root of the tongue, and pharynx.[1] Tickling these parts with the finger or with a feather is one of the readiest methods of inducing vomiting; and sometimes, as in cases of poisoning by mushrooms, the stomach can be emptied more readily by it than even by tartar emetic. When they are inflamed, they not unfrequently give rise to a cough, which is distinguished by violent expulsive efforts, nearly resembling retching, and not unfrequently accompanied by true retching, or even vomiting. This is often seen in children. One may frequently hear parents chide their children for coughing so noisily, and say to them, "Don't cough so loud," "Restrain your cough." Whenever these expressions are used, one may be almost certain that the chief cause of the cough is inflammation of the fauces, although this may sometimes be accompanied by bronchitis. 2. The gastric branches of the vagus and splanchnic nerves. It has been found by Blondlot and Bernard that when the mucous membrane of the stomach is gently tickled it becomes very rosy, and secretes gastric juice freely. If the mechanical irritation is carried further, so as to produce pain, the rosiness disappears and the surface becomes pale; the secretion of gastric juice is arrested; ropy mucus is poured out instead; and the movements of the stomach are much increased. At the same time the animal shows signs of uneasiness and nausea, and if the irritation be continued vomiting occurs, and bile has been observed to flow into the stomach.[2] Similar phenomena are produced by various kinds of food and medicine. Thus, the introduction of food into the stomach usually causes secretion of gastric juice; but when it is hard and indigestible, or irritating, it may arrest digestion and cause vomiting. Dilute bitter infusions give appetite, and seem to aid digestion; but a strong infusion of quassia will act as an emetic. As the vagi are the sensory nerves of the stomach,[3] and several of these phenomena can be produced by irritating their trunks, it is[4] probable that they have a good deal to do with the conduction of impressions from the stomach to the vomiting centre. But they are not the only afferent nerves from the stomach; for irritation of this organ will produce vomiting after they have been cut.[5] In this case it is probably through the splanchnic nerves that the irritation is conveyed to the medulla. 3. The branches of the vagi and splanchnics going to the liver and gall-duct. Vomiting is of frequent occurrence in hepatitis, and during the passage of a calculus through the gall-duct.[1] It is probably due to irritation of these nerves; although, as we have already said, it is difficult to decide whether the nerves act directly on the medulla or only indirectly through the brain. 4. The pulmonary branches of the vagus. Irritation of these branches is not a very common cause of vomiting, and it may be doubted whether they cause vomiting directly or only indirectly. It is possible that the vomiting in the early stages of phthisis[2] may be due to these nerves, and it may be well to bear them in mind, and to examine the lungs in cases of vomiting without any obvious cause. 5. The renal nerves. Vomiting occurs in nephritis and when calculi are irritating the pelvis of the kidney or passing down the ureter. 6. The mesenteric nerves. Vomiting is almost always present in cases of strangulated hernia or intussusception. It also occurs in animals after a ligature has been tied firmly round a piece of the small intestine. It may be arrested by dividing the mesenteric nerves passing from the ligatured point.[3] Its occurrence in general peritonitis is probably due likewise to irritation of the mesenteric nerves. 7. The vesical nerves. It is somewhat doubtful whether the vomiting sometimes observed in cystitis is due to irritation of these nerves or to irritation of other nerves by the extension of the inflammation from the bladder to the adjoining parts.[4] 8. Uterine nerves. Irritation of these nerves is one of the commonest causes of reflex vomiting. It may be produced either by the presence of the fœtus in the uterine cavity, by inflammation of the womb itself, or by electrical irritation of the uterine plexus.[5] 9. Ovarian nerves. Vomiting is a symptom of inflammation of the ovaries.[6] 10. Irritation of various parts of the brain. Vomiting may be produced by mental states excited by a disagreeable taste, by the sight or smell of disgusting objects, or even by the mere recollection of these; by emotions, such as anger, suspense, grief, joy, &c.; continued and intense thought, &c.;[7] by concussion; by the irritation consequent on loss of blood, or caused by the withdrawal of blood from the general circulation and its accumulation in the abdomen in cases of shock.[1] Vomiting is one of the most marked symptoms in meningitis and cerebritis, and is noticed also in some cases of tumours of the brain. Budge states that the cerebral centre for the movements of the stomach is the right corpus striatum and optic thalamus, especially the latter.[2] Irritation of these parts causes the stomach to move, while irritation of the corresponding parts on the left side of the brain have no action on the stomach whatever. From this observation we are led to suspect that when any irritation exists in the right hemisphere it will occasion vomiting more readily than irritation in the left hemisphere; and, according to Budge, this is actually the case.

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[1] Budge, *Die Lehre vom Erbrechen*, p. 131.

[2] Quoted in Carpenter's *Physiology*, 7th edition, p. 128.

[3] Budge, *Die Lehre vom Erbrechen*, p. 127.

[4] Rutherford, Trans. Roy. Soc. Edin., 18.

[5] Budge, op. cit., p. 94.

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[1] Watson, *Practice of Physic*, 4th edition, pp. 586, 606.

[2] Craigie, *Practice of Physic*, vol. ii. p. 996; Watson, op. cit., vol. ii. p. 617.

[3] Schiff, Moleschott's *Untersuchungen*, Bd. x. p. 390.

[4] Craigie, *Practice of Physic*, vol. i. p. 930.

[5] *Pflüger's Archiv*, Bd. viii. p. 351.

[6] Hooper's *Physician's Vade Mecum: Oöphoritis.*

[7] Budge, op. cit., p. 153.

There are thus many conditions of the brain which induce vomiting, and if we knew a little more about them we might separate them as we have done the nerves of the stomach, uterus, &c., instead of representing them all together, as we have done in the diagram. But even if we count them as one, we have altogether no less than ten nerves indicated in the diagram as exciting the vomiting centre reflexly. I shall not attempt to enter here on the means of diagnosing between the vomiting arising from irritation of all these nerves, but shall enter at once on the treatment.

As vomiting is generally a reflex act consequent on the irritation of some nerve, its rational treatment is either to remove the irritant, or, if this is impossible, to lessen the irritability of the nervous centre in the medulla, so that it no longer responds to the irritation. Not unfrequently we combine both methods. In inflammation of the fauces we use soothing or astringent gargles, confections, or glycerines. When the stomach is irritated by indigestible food or acrid matters present in its cavity, a large draught of warm water and mustard will often cause their ejection, and thus forms one of the best means for arresting further vomiting. If the irritant consist in an inflamed condition of the mucous membrane of the stomach itself, such treatment would be of little service, and we must endeavour to lessen the inflammation and to render the sensory nerves of the stomach less irritable. This we do by the use of bismuth and of hydrocyanic acid. It is well known that if one holds the finger over the mouth of a bottle of hydrocyanic acid for a few minutes it becomes numb and loses its sensibility; and we have every reason to suppose that the acid acts in the same way on the nerves in the wall of the stomach, so that the inflammatory condition present there no longer irritates them to the same extent. At the same time, however, we may give some drug to lessen the irritability of the vomiting centre in the medulla, such as morphia or chloral. Bromide of potassium has a considerable power to lessen most reflex actions, that of vomiting among the rest, and my friend Dr. Ferrier has used it with great success in sea-sickness. Acting on his suggestion, I have found the following formula very useful in gastric catarrh and subacute gastritis:—

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[1] *Practitioner*, vol. xi. p. 250.

[2] Budge, op. cit., p. 116.

℞. Bismuthi subnit, gr. x.
Potass. bromid., gr. xv.—xx.
Acid hydrocyan. dil., ♏ v.
Spt. chloroform, ♏ x.
Mucilag. tragacanth, fl. ʒ ij.
Aqua, ad. fl. ℥ j.
Sg. To be taken every three or four hours.

The medicine should be given about ten minutes before food, so as to diminish the irritability of the stomach and prevent the rejection of the nourishment, and it is often advisable to make the patient lie down on the left side either during or immediately after the meal. A tendency to vomit is often increased by lying on the right side. This is attributed by Budge[1] to the greater pressure exerted by the liver upon the stomach in this position, and this may be correct. It seems to me probable, however, that the mere weight of the stomach itself and of its contents will exert a drag upon it, directed more or less towards its pyloric end, either in the sitting posture or when recumbent on the right side. Now, the stomach is much more sensitive to any pull exerted in this direction than to one towards the cardia, even in the normal condition, and it is likely to be still more so when rendered hyperæsthetic by inflammation. I am therefore inclined to ascribe the benefit derived from lying on the left side to the absence in this position of any drag on the stomach and the irritation it would cause, rather than to any change in the relations of the liver.

I have already mentioned that it is doubtful whether irritation of the pulmonary branches of the vagus induces vomiting directly in the same way as irritation of the gastric branches does; but vomiting, occasionally of a very obstinate kind, is certainly found in phthisis, and it may be due to this cause. When it seems to be caused by the cough, it is sometimes checked by doses of six to ten grains of alum. This is rather hard to explain on the supposition that the vomiting is here due to the irritation of the pulmonary nerves, for the alum can have but little sedative action either on the lungs themselves or on the medulla. If we look at a patient coughing and mark the swollen veins on the forehead and neck, and remember that these are merely the visible signs of the general congestion throughout the whole venous system, including the veins of the stomach, we can hardly help thinking that the constant distension of the gastric veins during the almost incessant paroxysms must either in itself act as an irritant and thus induce vomiting, or lead to such a condition of the gastric mucous membrane as will do so. If this be so, the action of alum as a local astringent in removing congestion of the stomach may well explain its beneficial effect in arresting vomiting.

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[1] Budge, op. cit., p. 66.

The same principles prevail in the treatment of vomiting due to irritation of the other abdominal nerves as of those of the stomach; but in them we can less easily soothe the irritation by local means, and we are obliged to depend still more on remedies which will act on the medulla. But we by no means neglect to remove the irritant as far as possible. In hepatitis we strive to subdue the inflammation by blisters and depletion; in intussusception we try to restore the bowel to its normal condition by copious injections of water or oil; in strangulated hernia we relieve the incarcerated bowel by an operation; and in inflammation of the uterus, ovaries, and bladder, we have recourse to depletion, blisters, and other appropriate local remedies. Even in pregnancy, if other means fail, we are sometimes obliged finally to remove the irritant by inducing premature labour, and sacrifice the offspring in order to save the life of the mother.

But in such cases we base our hopes of arresting vomiting rather on our ability to diminish the excitability of the vomiting centre by means of opium, bromide of potassium, chloral, or hydrocyanic acid, than our power to remove the irritant.

In sea-sickness it is difficult to say what the irritant is which excites the vomiting centre to action. For my own part, I am inclined to believe that it is the shaking and dragging of the abdominal viscera caused by the motion of the ship. Subjective sensations point unmistakably to this as the cause, and the testimony they afford is strengthened by the fact that the sickness becomes less troublesome if the movements of the abdominal viscera are restrained by a tight bandage applied externally, or even by distension of the stomach with food. Whatever be the cause, however, the treatment is chiefly directed to the vomiting centre, and my friend Dr. Ferrier has found bromide of potassium in large doses of especial service in preventing as well as arresting the distressing nausea and vomiting which make many persons regard a trip across the Channel with perfect horror.

Thus far we have directed our attention to the act of vomiting, chiefly with the view of arresting it. Sometimes, however, we wish to induce it, and for this purpose we employ various substances which are generally all classed together as emetics. They naturally divide themselves into two subdivisions. Those belonging to the one act, like mustard, only when introduced into the stomach; those belonging to the other act like tartar emetic, both when introduced into the stomach and when injected into the veins. The first class includes, besides mustard, the sulphates of zinc and copper, as well as other irritant substances not usually employed as emetics: they induce vomiting reflexly by irritating the nerves in the stomach; and as the effect they produce is the same as that of scratching the mucous membrane, they are sometimes called mechanical emetics. The second class includes tartar emetic, ipecacuanha with its active principle emetia, and apomorphia; as well as veratria, delphinia, cyclamin, asclepiadin, and sanguinarin, which also cause vomiting when injected into the veins, but are not used medicinally as emetics.

It used to be considered certain that emetics of this class produce vomiting by acting directly on the nervous centre in the medulla oblongata, to which they were conveyed by the blood, and not by exciting it reflexly through irritation of the stomach, like the mechanical emetics. This view seems to be to a certain extent correct, and the vomiting which follows the injection of such a substance as tartar emetic into the veins is probably partly due to its direct action on the vomiting centre, but partly also to its reflex action on this centre through irritation of the stomach. For, as Buchheim has pointed out,[1] when emetics are injected into the blood, they are carried by it to the stomach as well as to the nerve centres, and thus they may irritate it and induce vomiting in exactly the same way as if they had been passed into it through the œsophagus. Tartar emetic, for example, will cause vomiting, either when injected into the veins or when swallowed, but in both cases it reaches the mucous membrane of the stomach and irritates it. It is true that when injected into a vein it reaches the vomiting centre also, but when swallowed it is sometimes rejected almost entirely, so that little or none reaches the vomiting centre. In both cases, then, the emetic acts on the stomach, but only in one does it act on the medulla. Yet vomiting occurs in the one case as well as in the other, and it is therefore only natural to attribute it to the action on the stomach, and not to its action on the medulla. Besides, tartar emetic only precipitates albumen when in presence of an acid; the gastric juice in the stomach therefore causes it to precipitate the albumen in the mucous membrane. This produces irritation and inflammation in it, when no change whatever can be detected, either by the naked eye or the microscope, in other organs, such as the medulla.[1] It may thus be fairly said that, until we do find a change in the medulla, we ought to ascribe the vomiting only to the action of the emetic on the stomach.

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[1] Buchheim, *Arzneimittellehre*, 1853-56, p. 304.

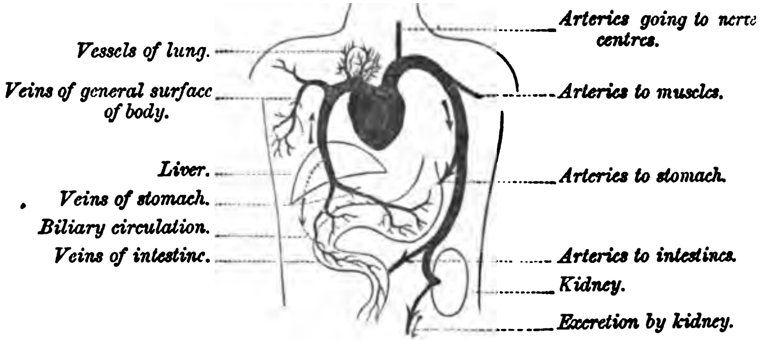

Fig. 21.—Diagram to show that emetics, &c., when absorbed by the superficial vein, will be carried both to the stomach and nerve centres.

But having said thus much on the one side of the question, let us turn to the other, and see what arguments may be adduced in proof of the action on the medulla being the true cause of vomiting. First of all comes the somewhat staggering fact, that after Magendie had removed the stomach of a dog altogether and replaced it by a bladder, the animal vomited when tartar emetic was injected into the veins. If the drug only caused vomiting by irritating the stomach, how can it do so after the stomach is removed? Hermann,[1] who supports the gastric action of tartar emetic, tries to get over this difficulty by supposing that it irritates the mucous membrane of the œsophagus and pharynx, and that the vomiting in Magendie's experiments was induced by its action on these parts. This explanation may be correct, but these parts, instead of being acid, like the stomach, are alkaline, like the medulla, and there is therefore no reason why the tartar emetic should act on them rather than the nervous centre. This experiment of Magendie's in itself affords great support to the old doctrine of the central action of tartar emetic, and recent experiments on the action of apomorphia render it strongly probable that apomorphia, another emetic of the same group, likewise acts on the medulla directly. Apomorphia, although of recent introduction, having been discovered by Mathiesson in April 1869, and first investigated by Gee a month afterwards, bids fair to supplant other emetics, as it is so rapid and certain in action, and can be applied either subcutaneously or administered by the mouth with equal ease. Gee noticed that small doses of $\frac{1}{5}$ of a grain caused vomiting in dogs, and large ones occasioned in addition a curious *manége* movement, the animals running round in a circle[2] in somewhat the same way that Longet noticed them to do after a wound of the optic thalamus.[3]

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[1] Ipecacuanha does so also. Gubler, *Comment. Thérap.*, 1868, p. 627; and D'Ornellas, *Bull. de Thérap.*, tome lxxxiv. p. 199.

This effect of apomorphia points to an action of the drug in the nervous centres, and is all the more interesting when we remember that Budge placed the cerebral centre for the stomach in the right thalamus.

Gee's experiments were repeated and extended by Siebert,[4] who noticed that apomorphia produced great acceleration of the respiration, pointing distinctly to excitement of the respiratory centre, which is closely connected with the centre for vomiting. Now, the respiratory centre, like the vomiting centre, may be excited reflexly by irritation of the vagi; but Harnack,[5] in a recent research, has found that the excitation caused by apomorphia is not reflex, but is due to the direct action of the drug on the respiratory centre itself. As this centre and that for vomiting are so closely connected, it seems a fair inference that the apomorphia acts directly on the vomiting centre also, and produces emesis by irritating it. As both tartar emetic and ipecacuanha excite the respiratory centre also, it is probable that like apomorphia they act directly on the medulla, and thus we are led back to the old notion of the central action of this group of emetics. But as these are such weighty arguments in favour of their reflex action, we can hardly help coming to the conclusion that they may act either centrally or reflexly, and in all probability usually combine the two actions whenever they are introduced into the blood. When apomorphia is injected subcutaneously or into a vein, a smaller dose is sufficient to produce vomiting than when it is introduced into the stomach,[1] while a larger dose of tartar emetic must be injected than would be sufficient if administered by the mouth. This seems to show that the emetic effect of apomorphia is due chiefly to its action on the medulla, and less to its action on the stomach, while tartar emetic acts less on the medulla and more on the stomach. It has been already mentioned that tartar emetic only acts as a powerful irritant when it comes in contact with an acid, especially hydrochloric acid, as it does in the healthy stomach. Consequently, its irritant action on the stomach will be much less if the hydrochloric acid usually present in the organ should be diminished or absent. Now, it has been found by Manassein[2] that the proportion of acid in gastric juice is diminished, or the acid altered, during the febrile condition; and clinical experience long ago showed that tartarated antimony did not exert its usual emetic action in persons suffering from pneumonia, or, as physicians were accustomed to express it, there was a tolerance of the drug.

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[1] Hermann, *Pflüger's Arch.* v. p. 280.

[2] Gee, *Clinical Society's Transactions*, vol. ii. p. 168.

[3] Longet, *Traité de Physiologie.*

[4] Siebert, *Untersuch. über d. physiol. Wirkungen des Apomorphins.* Inaug. Diss. Dorpat, 1871, p. 60.

[5] Harnack, *Arch. f. exp. Pathol. u. Pharmakol.*, Bd. II. p. 283.

The employment of emetics is not nearly so extensive now as it formerly was. They may be administered (1) for the simple purpose of evacuating the contents of the stomach and duodenum; (2) for the effect of the muscular movements during vomiting upon other organs; (3) for their effect on the nervous system.

In cases of poisoning, the first thing to be done is to remove the poison from the stomach, and thus prevent it either from injuring the gastric walls themselves or from being absorbed into the blood. We usually employ sulphate of zinc or of copper as an emetic for this purpose.

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[1] Greve, *Berlin. Klin. Wochensch.*, 1874, p. 351.

[2] Manassein, *Virchow's Archiv*, 1872, lv. p. 413.

In indigestion, the case of the patient is often really one of slight poisoning, although we are rarely accustomed to regard it as such. Not only do the undigested articles of food act as mechanical irritants to the stomach, but they undergo fermentation, and the products of this are real poisons. Butyric acid, for example, is frequently produced by the fermentation of food in the stomach, and, as Otto Weber has shown, it is a powerful poison. The same is the case with the sulphuretted hydrogen, which gives the disagreeable odour of rotten eggs to the eructations of some patients. The irritating matters in the stomach not unfrequently cause nausea and headache, without leading to vomiting; but if they should be ejected, nausea generally ceases. Therefore, the best treatment frequently is to give copious draughts of warm water, or warm water and mustard. We use warm or tepid water because cold lessens the irritability of the stomach, and thus prevents emesis altogether; and we add the mustard in order to stimulate the gastric walls. But it is not those matters only which have been introduced into the stomach which are evacuated by vomiting. A quantity of the gastric secretions is also ejected, and anything they may happen to contain is thus removed from the body.

In a former paper[1] I explained that certain substances, when swallowed, were absorbed by one part of the intestinal canal, excreted by another, and again re-absorbed, so that they may sojourn a long time in the body before being finally eliminated (*vide* p. 201). Thus iodide of potassium is absorbed by the stomach, excreted by the salivary glands, and re-absorbed by the stomach, so that it goes round and round in the gastro-salivary circulation. Most metals, lead probably among the rest, are excreted in the bile and absorbed by the small intestine, so that they go round in the entero-hepatic circulation. Purgatives, by hurrying the secretions through the intestinal tube, prevent re-absorption to some extent, and thus aid in the expulsion of the metals or other substances they contain. But it is much further from the duodenum to the anus than from the duodenum to the mouth; and anything taking the longer route is much more likely to be absorbed than if it took the shorter way. In violent vomiting, bile is evacuated by the mouth without getting a chance of re-absorption; and a course of emetics, therefore, seems far better suited to remove bile and anything contained in it—such as lead or copper—than a course of purgatives can be. It is not improbable that it is so; and a mixed course of emetics and purgatives is really exceedingly useful in lead-poisoning;[1] but the discomfort which attends vomiting causes a very decided preference to be given to purgatives. Nor are metals the only substances which circulate in this way; bile itself does so, and its removal by vomiting gives relief in biliousness. Lussana[2] also thinks that malarial poison, whatever that may be, circulates with the bile in the portal system; and it is exceedingly interesting to learn that the natives of Morocco, as my friend Dr. Duckworth informs me, having no quinine, actually treat intermittent fevers by emetics. It is stated also by eminent physicians that an emetic at the beginning of a continued fever, such as typhus, is of great service; and it is possible that it acts there in the same way as we suppose it to do in intermittent fevers, viz. by removing the fever poison.

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[1] *Practitioner*, vol. xii. p. 408.

The violent expulsive efforts in vomiting do not act only on the stomach; they affect also the lungs and expel anything in the air-passages still more effectually than can be done by coughing. Emetics are therefore used in croup and bronchitis. The gall-bladder is also much compressed by the descending diaphragm, and the bile is forced through the common bile-duct, instead of trickling through it with almost no pressure at all, as it usually does. Any obstruction in the duct which the ordinary pressure of the bile would never move, will then be pressed on into the duodenum, unless it be too firmly impacted. Gall-stones in the duct, and jaundice depending on the obstruction they occasion, can thus be removed by the action of emetics; but there is always the danger that, if the obstruction is at all firm, the violent efforts may burst the gall-bladder and lead to the death of the patient.

Finally, emetics may be used to produce an "impression on the nervous system,"—a vague term which may mean anything or nothing, and may be explained by every one as best he pleases. The facts are, that in cases of epilepsy, where the fits tend to recur every few minutes and the unconsciousness may last for hours, an emetic may sometimes put an end to the attack. An impending ague fit may sometimes be arrested by an emetic given just before it is expected to begin.[3] It may be also useful in hysterical fits; but these are so readily arrested by a galvanic shock, that few would think of using anything else while a battery is at hand.

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[1] *Dictionnaire des Sciences Médicales*, 1815, tome ii. p. 522.

[2] Lussana, *Lo Sperimentale*, tome xxix., 1872, p. 358.

[3] *Materia Medica*, &c., by H. C. Wood, p. 362.

It seems probable that the nervous excitement which causes the epiletic or other fit, discharges itself in the exertion of vomiting, but it would take too long to enter on this subject here.[1]

To sum up, the chief points in relation to vomiting and the action of drugs upon it are :—

1. Vomiting consists in two factors, viz. (1) the simultaneous compression of the stomach by the abdominal muscles and diaphragm, and (2) the opening of the cardiac orifice by the contraction of the longitudinal fibres of the œsophagus.

2. When innervation is disturbed, these two factors do not occur together, and thus retching may occur without vomiting.

3. The movements of vomiting are correlated by a nervous centre in the medulla oblongata, from which impulses are sent down through various motor nerves to the muscular structures engaged in the act.

4. This nervous centre is probably closely connected with the respiratory centre, but is not identical with it.

5. It is usually set in action reflexly by irritation of the pharyngeal, gastric, hepatic, enteric, renal, uterine, ovarian, and possibly also by the pulmonary and vesical nerves which come from the periphery towards it. It may also be excited by impressions sent down to it from the brain.

6. Vomiting may be arrested in two ways, either by removing the irritant which is exciting the vomiting centre, or by lessening the excitability of the centre itself, so that it no longer responds to the impressions made on it from without.

7. Emetics may be divided into two classes: those which act only on the stomach, and those which act on the vomiting centre also.

8. Tartar emetic probably acts in both ways. Tolerance of it is probably due to want of hydrochloric acid in the stomach.

9. Emetics may be used to evacuate the stomach and duodenum. They thus remove irritating matters, poisons generated in the stomach by putrefaction, bile, and metals or fever poisons (such as that of ague) circulating in the entero-hepatic circulation.

10. They may be also used to empty the bronchi and gall-bladder, or to cut short epileptic and to prevent ague fits.

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[1] See Lauder Brunton on *Inhibition*, West Riding Asylum Reports, 1874.

ACTION OF MERCURY ON THE LIVER.

(*'British Medical Journal' for January 5th,* 1873.)

THE valuable report of the Edinburgh Committee of the British Medical Association on the Action of Mercury on the Liver added very largely to our knowledge of the subject, without altogether settling a great many important questions concerning the therapeutics of the drug.[1]

Few physicians who have had any practical experience of the use of mercurial purgatives in cases of so-called "biliousness," will deny that their immediate effect is decidedly beneficial, although many may be deterred from employing them by the belief that, once begun, they must be continued, and will ultimately prove highly injurious to the patient.[2] The relief occasioned by a blue pill and a saline purgative is a matter of every day observation; but the *modus operandi* of the mercury is a question on which much difference of opinion prevails, and any attempt to answer it must depend, to a considerable extent, on the view taken of the pathology of "biliousness." Do the dull, heavy, and languid feelings, the disinclination to exertion, mental or bodily, the irritable or peevish temper, the failing appetite, the muddy complexion, and dingy conjunctiva, which most persons know, alas! too well, owe their origin to catarrhal changes in the gastric and intestinal mucous membranes alone? or is popular pathology partly right in ascribing them to "bile in the blood" or a "sluggish liver"? For our part, we are inclined to hold the latter opinion, and to believe that not without reason are the disappearance from the eyes of the yellowish tinge which seems as if it only required to be somewhat deepened to become jaundiced, and the coincident appearance of bile in the stools after a mercurial purgative, pointed to as proofs that too much bile in the blood is (partly at least) the cause of biliousness, since with its removal from the system the symptoms disappear. So long as it was supposed that bile was formed in the blood, and only separated from it by the liver, such a view as this might meet with ready acceptance; but how are we to reconcile it with the doctrine of most physiologists, that bile is not separated from the blood by the liver, but is formed within that organ itself? Fortunately, this is not difficult, for Schiff has shown that we have been latterly accustomed to take too narrow a view of the functions of the liver, and that it separates bile from the blood, or, as we may term it, excretes, as well as forms or secretes it.[1] This he did by tying the ductus choledochus in dogs, and putting a cannula into the gall-bladder, so that he could collect the whole of the bile secreted by the liver. Immediately after the operation the flow of bile was abundant, but in the course of half an hour it became greatly diminished, and remained so, never again reaching the amount at first observed. This curious result Schiff found to be due to the bile being all removed from the body by the cannula, instead of passing, as it normally does, into the duodenum, whence it is reabsorbed into the blood, and again excreted by the liver. In the first half-hour after the fistula was made, the liver was excreting bile as well as forming it, and so more flowed from it than in any subsequent period when it was only forming bile.

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[1] *Report of the British Association,* 1868, p. 187, and *Brit. Med. Journ.*, 1868, vol. ii. pp. 78 and 176, and 1869, vol. i. p. 411. For an excellent *résumé* of the literature on this subject, see Fraser's article in the *Edinburgh Medical Journal,* April, 1871.

[2] Prout, *Stomach and Renal Diseases.* 5th Edition, p. 52.

Whenever Schiff introduced bile into the blood, either by injecting it directly into the veins, or putting it into the duodenum, stomach, or areolar tissue, the flow of bile from the liver was at once increased, but again diminished when the additional bile had been excreted. By another series of experiments, he also found that not only can a certain quantity of bile be present in the blood without producing jaundice, but that it probably is always present. We thus see that, normally, a great part of the bile goes round in a circle, from the liver into the duodenum, thence into the blood, so to the liver again, while another part is carried down by the contents of the intestine, and, after becoming more or less altered, passes out of the body with the fæces.

Let us now consider what the result will be if the quantity of bile circulating in this way should be increased. All observers are agreed that abundant food increases the secretion of bile; and we will suppose that this has been done by continued good living and a succession of heavy dinners, such as most Englishmen are accustomed to indulge in at Christmas time. The stomach and intestines, in all probability, also become disordered, and it would be hard to say what part of the condition in which the patient then finds himself is to be assigned to them and what to the bile; but this we can readily see, that all the symptoms that an excess of bile in the blood can produce, short of jaundice, will be occasioned; nor can these be removed by any purgative medicine, which, like aloes, will merely act on the large intestine. The colon may be cleared of its contents, but the bile will go on undisturbed in its accustomed round. Very different, however, will be the result if a purgative be administered which will act on the duodenum, as we will assume mercury to do, more especially if it be combined with such an one as sulphate of magnesia, which will act on the rest of the bowels. The mercury stimulates the duodenum to peristaltic contraction, the bile is hurried rapidly downwards, the remainder of the intestine is likewise contracting vigorously, and in a short time all chance of reabsorption is gone, for the bile has been finally evacuated. All excess of bile has thus been got rid of, and, as far as it is concerned, the liver, duodenum, and other organs may now go on performing their functions in the normal way, until some fresh indiscretion on the part of the patient again causes a disturbance.

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[1] *Pflüger's Archiv*, 1870, p. 598, and Lussana, *Lo Sperimentale*, tom. xxix. 1872, p. 337.

In the account we have just given of the action of a mercurial purgative, we have assumed that it acts on the duodenum. Now, this we cannot at present directly prove; but we have the indirect proof afforded by the fact, observed by Radziejewski,[1] that leucine and tyrosine, which are products of pancreatic digestion, appear in the fæces after the administration of mercurials, as well as that yielded by the large evacuations of bile which calomel produces, and which, as Buchheim has shown,[2] really give their characteristic green colour to the so-called "calomel stools." By thus causing elimination of bile, and lessening the amount circulating in the blood, calomel acts as a true cholagogue, in the sense in which the word was employed by those physicians who looked upon the liver merely as an excreting organ, although, as modern experiments have proved, it may lessen the amount actually secreted. This it can do in a double fashion, for not only does it diminish the quantity which has to be excreted by the liver in the manner already explained, but, as the Edinburgh Committee of the British Medical Association have shown, it likewise lessens the formation of bile. In their experiments, the diminished secretion which followed mercurial purgation could not be due to the prevention of reabsorption, for the whole of the bile was regularly removed from the body as quickly as it was secreted, and we are, therefore, obliged to attribute it to diminished formation. What the cause of this may be, we are not at present in a position confidently to state; but we know that fasting lessens the formation of bile, and if the food be hurried out of the intestine by a purgative before it has time to be absorbed, it might just as well not have been eaten at all.

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[1] Reichert u. Du Bois Reymond's *Archiv*, 1870, p. 1.

[2] Buchheim, *Arzneimittellehre*, p. 262. See also Scott, *Archives of Medicine*, No. iii. p. 224, and Mosler, *Virch. Arch.*, xiii. p. 41.

We have now seen how an excess of bile may be present in the blood without the liver being either "sluggish" or "torpid;" and it seems to us that the difference of opinion which has hitherto prevailed regarding the action of mercurials is in great measure due to attention having been directed to the amount of bile poured out from the liver, instead of to what is of much more importance in reference to "biliousness"—viz. the quantity which remains in the blood after a dose of blue pill or calomel.

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ON THE ACTION OF PURGATIVE MEDICINES.

('*The Practitioner*,' VOL. XII. *May and June* 1874.)

BEFORE entering upon their use, it will be well to consider the question—How do certain substances act as purgatives?

It is generally believed that most purgatives increase the number of the stools, and render them more fluid in a double manner; firstly, by stimulating the intestine to increased peristaltic action, and secondly, by inducing a discharge of fluid from its mucous surface, and thus to some extent washing out its contents.[1] Some purgatives, such as aloes, are supposed to act almost entirely by stimulating the peristaltic movements, their effect on the secretion from the intestine being almost *nil;* while others, like bitartrate of potash, are supposed to induce a very free secretion from the mucous membrane, while they have so little influence upon the peristaltic movements that the fluid poured out from the intestinal wall after their use may remain in the torpid intestine so long as to be again reabsorbed.[2] Others again, like croton oil, are supposed to increase the flow of liquid into the intestine, and at the same time to stimulate the peristaltic movements.

This view of the action of purgatives is the one generally held in this country. It is supported by several French authorities, but is rejected by some of the most eminent German pharmacologists.

All are agreed in believing that the action of many purgatives is due to their power of quickening peristaltic action, but several German authors are inclined to regard increased peristalsis as the only, or almost the only, cause of purgation, and to deny that there is any increased flow of fluid from the intestinal walls. They consider that purgative medicines, by quickening the peristaltic action, cause the contents of the intestine to be hurried along and expelled per anum before there has been time for the absorption of their fluid constituents. Instead, therefore, of the stools being firm and consistent as in the normal condition, they are loose and watery like the fæcal matters which one usually finds in the small intestine on post-mortem examination. By making a fistulous opening in the ascending colon of a dog, Radziejewski, the distinguished pharmacologist, whose untimely death is much to be deplored, has found[1] that the intestinal contents, when poured from the small into the large intestine, almost exactly resemble the stools produced by the use of purgative medicines. He therefore, and several German authors who follow him, attribute the watery condition of the stools observed after the administration of vegetable purgatives, such as castor or croton oil, to increased peristalsis only. The objection may be raised that the stools produced by elaterium, for example, are more watery than the contents of the small intestine usually are; but this can readily be met. For it is not merely the peristaltic action of the large intestine which is quickened so that the fæces are expelled in much the same condition as they entered it. The movements of the small intestine are also accelerated, so that little absorption can take place in it, and its contents will therefore leave it in a more watery condition than usual, and being quickly hurried through the large intestine, will produce a liquid motion.

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[1] Pereira's *Materia Medica*, vol. i. p. 247; Stillé's *Therapeutics and Materia Medica*, vol. ii. p. 404; Ringer's *Therapeutics*, 3d ed. p. 154.

[2] Garrod's *Materia Medica*, 3d ed. 1868, p. 401.

This explanation may seem satisfactory enough in regard to the action of vegetable purgatives, and of such mineral ones as calomel; but it hardly explains the effects of salines, such as bitartrate of potash or sulphate of magnesia. These are allowed by Buchheim[2] to have an additional action besides that of increasing peristalsis. They retain water with great avidity, they diffuse slowly, and by thus preventing the water which is taken with them or swallowed shortly afterwards from being absorbed, at the same time that they quicken the intestinal movements, they wash out the whole alimentary canal from end to end, in much the same way as a simple injection washes out the rectum. A large quantity of fluid is normally poured into the intestine by the liver, pancreas, and intestinal glands, and this alone, according to Kuhne,[3] is greater than the amount expelled in the most profuse diarrhœa. When, in addition to this, the quantity of fluid ingested by the mouth is taken into consideration, it seems perfectly unnecessary to believe that any increased flow of fluid takes place from the intestinal walls. Moreover, direct experiments seemed to show that purgatives did not increase the flow of fluid from the intestinal walls. Such a flow might be of two kinds: it might consist of a transudation from the blood-vessels, as supposed by Schmidt,[1] or of a secretion from the intestinal glands. In the former case it would contain a considerable quantity of albumen like the fluid in ascites or pericarditis; while in the latter, albumen might only be present to a very slight extent. A consideration of the structure of the intestine alone is sufficient to show the improbability of a direct transudation of fluid from the vessels: but Radziejewski[2] has set the matter at rest by examining the composition of fæces before and after the use of purgatives, and proving that the stools produced by them do not contain albumen to anything like the amount they ought to do if transudation fluids were present in them to any considerable extent. The most decisive experiments, however, were those which were first made by Thiry by means of the intestinal fistula which bears his name. These seemed to show in the most conclusive manner that purgatives neither increased the flow of fluid from the intestinal walls by transudation nor by secretion. In order to discover exactly what went on in the intestine, Thiry conceived the idea of isolating a portion of it and attaching one end of this piece to an opening in the abdominal walls while its nerves and vessels remained uninjured, and the whole piece was as nearly as possible in a normal condition. He therefore divided the jejunum or ileum in two places, a few inches apart from each other, sewed up one end of the piece thus isolated, and attached the other end to the wound in the abdomen. The short *cul-de-sac* thus formed remained attached to the mesentery and received its vascular and nervous supply as usual. The divided ends of the intestine were then sewn together, and the continuity of the alimentary canal restored.[3] This is represented in the accompanying figure (Fig. 22), where B indicates the place where the piece C D, which originally lay between A B and B E, has been cut out, and the two ends of A B and B E sewn together so that the alimentary canal is again complete though a few inches shorter than before. F, G, D, is the abdominal wall, and *a* and *b* are the vessels and nerves in the mesentery.

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[1] Reichert u. Du Bois-Reymond's *Archiv*, 1870, p. 95.

[2] Buchheim's *Arzneimittellehre*, p. 136.

[3] Kuhne, *Lehrbuch der physiologischen Chemie*, p. 151.

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[1] C. Schmidt, *Characteristik der epidemischen Cholera*. Leipzig, 1850, p. 90.

[2] Radziejewski, op. cit. p. 75.

[3] Thiry, *Sitzungsbericht der Wiener Academie*, 1864, vol. L. p. 77.

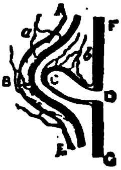

Fig. 22.

The little bag of intestine C D can be easily reached from the outside of the body, and the result of any experiment upon it readily ascertained. It apparently remains in a perfectly healthy condition, and when tickled with a feather readily secretes intestinal juice. But a purgative medicine introduced into it neither increases the secretion nor causes transudation from the vessels, although the drug produces brisk purgation if administered to the animal by the mouth. Thiry[1] in his experiments used croton oil, senna, and sulphate of magnesia. Schiff[2] repeated them with aloes, jalap, and sulphate of soda; and Radziejewski[3] with croton oil and sulphate of magnesia. All these observers obtained a like negative result. Further proof seems superfluous to show that purgatives act only by accelerating peristaltic action, and not by increasing the flow of fluid from the intestinal wall; and I have not only believed but have taught this, till the publication of some experiments of Moreau,[4] their verification by Vulpian, and the results I have myself obtained on repeating them, have led me to alter my opinions.

These experiments were made by opening the abdomen of an animal, and tying four ligatures tightly round the small intestine a few inches apart from each other, so as to isolate three portions of intestines (Fig. 23). A purgative medicine was then injected by means of a subcutaneous syringe into the middle part, and the intestine being then returned into the abdominal cavity, the wound in the abdominal parietes was sewn up. A few hours afterwards the animal was killed, and on examination the middle portion of intestine, into which the purgative had been injected, was found full of fluid, while the portion on each side was completely empty. All three pieces having been equally empty at the commencement of the experiment, and all three having been placed under exactly the same conditions, we cannot attribute the copious secretion into the middle loop to any other cause than the action of the purgative injected into it. Moreau's experiments have been repeated by Vulpian,[1] and I subjoin the notes of the results which I have obtained.

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[1] Thiry, op. cit., p. 95.

[2] Schiff, *Nuove ricerche sul potere degerente*, &c. Il. Morgagni, July 1867, p 5.

[3] Radziejewski, op. cit., p. 85.

[4] Moreau, *Archiv Générales de Médecine*, August 1870, p. 234.

Exp. I.—A cat was chloroformed, and an incision about 1½ inches long made through the abdominal walls in the middle line about the umbilicus. A coil of small intestine was drawn out, and four ligatures tied tightly round it so as to isolate three loops of intestine. One-hundredth of a drop of croton oil mixed with one drop of alcohol was then injected into the second loop by means of an extremely fine Wood's syringe. (The quantity of croton oil was obtained by thoroughly mixing 1 part of oil and 99 of alcohol) The intestine was then replaced, the wound sewn up, and the animal allowed to recover from the chloroform. About four hours and a quarter afterwards it was instantly killed by a single blow on the head with a hammer, and the intestine examined :—

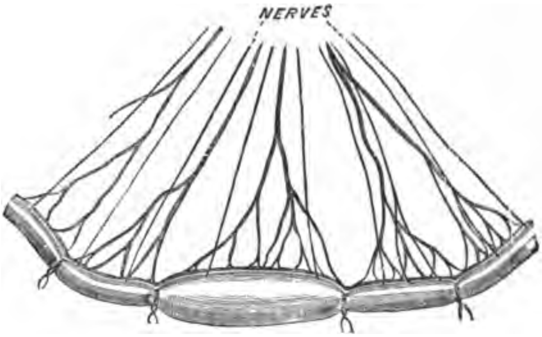

Fig. 23.

Loop 1.	Length $3\frac{6}{10}$ inches	. . .	Contained 7 minims of fluid.
„ 2.	„ $1\frac{7}{10}$ „	. . .	„ 20 „ „
„ 3.	„ $3\frac{4}{10}$ „	. . .	„ 10 „ „

Exp. II.—A cat was operated on in the same way as the first, and $\frac{1}{10}$ of a drop of croton oil with 10 drops of alcohol was injected into a loop of intestine which, as in the former case, lay between two others likewise isolated by ligatures. About four hours and a quarter after the operation the cat was killed in the same way as the first :—

Loop 1.	Length $2\frac{9}{10}$ inches	. . .	Completely empty.
„ 2.	„ $3\frac{2}{10}$ „	. . .	Contained 80 minims of fluid.
„ 3.	„ $3\frac{1}{10}$ „	. . .	Empty.

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[1] Vulpian, *Bulletin Général de Thérapeutique*, tome lxxxiv. 1873, p. 522.

Exp. III.—Made in the same way as the preceding ones. One drop of croton oil and 9 of alcohol injected into loop No. 2. Four hours and a quarter afterwards:—

Loop 1.	Length	$4\frac{9}{10}$	inches	. . .	Empty.
„ 2.	„	$5\frac{9}{10}$	„	. . .	Contained 110 minims of fluid.
„ 3.	„	$6\frac{4}{10}$	„	. . .	Empty.

Just about the middle of loop No. 2 the mucous membrane or about 1½ inch was thickened, much reddened, and inflamed.

Exp. IV.—Made in the same way as the preceding ones. Ten drops of croton oil were injected into loop of intestine No. 2. I am not quite certain that the whole of the 10 drops found their way into the intestine, as the oil passed very slowly through the fine hollow injecting needle, although considerable force was used. The syringe at one instant became detached from the needle, and a little oil escaped. I tried to guess the right amount, however, and injected it afterwards. Four hours and a quarter after injection:—

Loop 1.	Length	$6\frac{7}{10}$	inches	. . .	Contained	155	minims	of fluid.
„ 2.	„	$5\frac{7}{10}$	„	. . .	„	180	„	„
„ 3.	„	$5\frac{3}{10}$	„	. . .	„	75	„	„

The fluid, as measured, was not quite accurate, for a tapeworm was present in the intestine, and parts of it helped to swell the apparent bulk of the fluid.

In the middle loop of No. 2 the mucous membrane was much inflamed for about two inches or rather more. This is the part with which the oil would come in contact after its injection through the intestinal wall.

The mucous membrane of all three loops, as well as that for four or five inches above the upper and below the lower loop, was much thickened, and the lumen of the intestine partially filled with a glairy fluid. Above and below these parts the intestine was firmly contracted and natural, just as when the injection was made. The mucous membrane in all the coils was somewhat pale, as also at the thickened parts outside. At the other parts where it appeared unaltered, its inner surface was of a yellow colour, probably from adherent biliary or fæcal colouring matter.

Exp. V.—A cat was experimented on as before. A small quantity of elaterin (probably about $\frac{1}{10}$ of a grain) suspended in 30 drops of water was injected into loop No. 2. About four hours and a quarter afterwards:—

Loop 1.	Length $5\frac{3}{10}$ inches	. . .	Contained 60 minims of fluid.
„ 2.	„ $6\frac{1}{10}$ „	. . .	„ 110 „ „
„ 3.	„ $5\frac{4}{10}$ „	. . .	Empty.

In all three loops, as well as for five or six inches beyond the loops, the mucous membrane (or whole intestinal wall?) was pale and somewhat thickened.

Exp. VI.—A cat was chloroformed, an incision made in the abdominal walls, and three loops of intestine isolated by ligatures. Into the middle one (No. 2) about two grains of gamboge made into an emulsion, with about 60m. of water, were injected at 11.15. The wound was then sewn up, and the animal allowed to recover. About four hours afterwards the cat was killed by a blow on the head and the intestine examined:—

Loop 1.	Length $4\frac{1}{8}$ inches	. .	Empty. Mucous membrane yellowish on the surface.
„ 2.	„ $5\frac{5}{8}$ „	. . .	Contained 185 minims of yellowish turbid fluid with numerous flocculi. The surface of the mucous membrane was slightly paler than in No. 1.
„ 3.	„ $6\frac{2}{3}$ „	. . .	Empty. Colour like No. 1.

Exp. VII.—The experiment was performed on a cat in the same way as the previous one. Into the middle loop of intestine about one grain of jalapin in a small quantity of spirit (proof) and water (equal parts) was injected. The intestine was examined about four hours afterwards. The cat seemed sleepy, and the respiration appeared to be impeded by fluid in the respiratory passages:—

Loop 1.	Length $5\frac{1}{8}$ inches	. . .	Quite empty. Surface of mucous membrane normal.
„ 2.	„ $6\frac{1}{2}$ „	. . .	Contained 17 minims of tenacious fluid. Surface of mucous membrane moister than in No. 1.
„ 3.	„ $5\frac{1}{2}$ „	. . .	Mucous membrane moist. Covered with bloody mucus.

Exp. VIII.—The experiment was made in the same way as the preceding ones. Into the middle loop, No. 2, about 7 grains of sulphate of magnesia dissolved in 105 minims of water were injected. Into each of the side loops 105 minims of water were injected. The intestine was examined about four hours afterwards:—

Loop 1.	Length 5 inches . . .	Quite empty.
„ 2.	„ 7½ „ . . .	Contained 320 minims of fluid. This was of a pale amber colour and glairy consistence, mixed with flakes of whitish mucus. Not the slightest trace of congestion was noticeable. Mucous membrane was quite natural in No. 2.
„ 3.	„ 5½ „ . . .	Quite empty.

Exp. IX.—The experiment was conducted like the others. Into the middle loop of the cat's intestine 85 minims of a saturated solution of sulphate of magnesia were injected. On examination four hours afterwards, the middle loop, which was 7½ inches long, contained 425 minims of fluid. The other two loops were quite empty.

Exp. X.—The experiment was conducted as before. Into the middle loop of the cat's intestine about 90 minims of a saturated solution of sulphate of magnesia were injected. The loop was about 6 inches long. After about five hours the loop was found to contain about 250 minims of fluid. The loop above it contained a little bloody mucus, the one below it was entirely empty.

These experiments show that croton oil, elaterin, gamboge, and sulphate of magnesia all cause a copious secretion from the intestine. Jalapin did not do so in the single instance in which it was tried; but I am not quite certain that the whole of it went into the intestine, as it formed a resinous mass which I had considerable difficulty in getting to pass through the nozzle of the syringe. The fluid contained in the intestine after the use of the other purgatives appears to be a secretion, not a transudation, for it does not contain much albumen as a transudate would do. In Exp. VIII. it amounted to about 42 minims, and in Exp. IX. to about 56 minims per square inch of intestine acted on by the purgative. The greatest secretion was caused by sulphate of magnesia; next came croton oil, elaterin, and gamboge; while jalapin stood last of all.

Such positive results as these seem to prove that purgatives do cause a flow from the intestinal wall, quite as conclusively as experiments with Thiry's fistula do the opposite; and as the conditions under which the purgatives act on the intestines more nearly approach the normal in Moreau's than in Thiry's experiment, there can be but little doubt that purgatives produce a decided secretion of fluid from the intestine, as well as accelerate peristaltic movements.

Having now come to a conclusion regarding the manner in which purgatives act, let us consider some of their effects upon the body. It is evident that the increased peristaltic action of the bowels will hurry along the food and cause its expulsion before the nutritive matters it contains have been fully absorbed.

If a purgative be taken immediately before or shortly after a meal, the result will be much the same as if less food had been taken or the meal entirely omitted. Many persons who are accustomed systematically to eat more than they require will regularly take a "dinner pill" or a course of Seidlitz or Pullna waters, although they cannot be persuaded to deprive themselves of a single opportunity of enjoying the pleasures of the table or to put the least restraint upon their appetites.

Increased peristaltic action will also remove fæcal matters as well as food from the intestine, and it will be greatly assisted in this by the increased secretion from the intestinal wall which purgatives induce.

I have already mentioned that mechanical irritation, such as tickling with a feather or rubbing with a glass rod, will cause secretion from the *cul de sac* of intestine in Thiry's fistula, and hardened fæces seem to have a similar action. Thus diarrhœa is not unfrequently caused by the presence of scybalous masses or other irritating matters in the intestine, and nothing cures this like a dose of castor-oil. At first sight it seems odd that the scybala are not washed away by the fluid which they cause to be secreted, but this secretion will probably be poured out only at or below the point where they lie, and thus it will have little effect on them, though it may wash out the lower part of the bowel thoroughly enough. A dose of castor-oil, on the contrary, will induce secretion in the bowel above the scybala, and the fluid in its downward rush will carry the fæcal masses along with it.

Irritating substances in the intestine, besides acting locally upon the bowel in the manner just indicated, may exercise an influence upon distant organs through the medium of the nervous system. Sir Charles Bell[1] observed a case in which ulceration of the ileum was found in a man who had suffered severely from tic, but there was nothing wrong whatever with the fifth nerve, in which the pain was felt. He therefore felt convinced that although the pain was felt in the cheek, its true source was irritation in the ileum. Acting on this belief, he administered croton oil ($\frac{1}{12}$ of a drop in combination) in tic douloureux for the purpose of removing any morbid condition of the bowel, and obtained the happiest results from its employment; and Newbigging[1] has found it equally efficacious in sciatica.

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[1] Bell, *Practical Essays*, p. 85.

It is difficult to say whether the pain felt in the cheek is simply due to the irritation of the intestinal nerves being reflected, as it is termed, along the fifth nerve, or whether the irritation induces such a change through the vaso-motor nerves in the blood-vessels of the cheek as actually to set up a new irritation in the course of the fifth nerve itself. At any rate, the vessels of the face and head are very easily affected by any irritation of the stomach or intestines, as is easily seen from the extraordinary pallor which at once overspreads the face when a state of sickness and nausea has been induced. The effect of constipation in causing a feeling of fulness in the head is well known, and Ludwig and Dogiel[2] found that when the intestines of an animal were moved by the finger the rapidity with which the blood flowed through its carotid arteries was greatly increased. The frontal headache which so frequently accompanies gastric or intestinal derangement may possibly be due to some of the intestinal contents which ought to be evacuated being absorbed and acting as poisons on the vessels of the head themselves. I am inclined to think, however, that although this may have much to do with it, yet the headache very often depends to a great extent on some alteration in the cerebral circulation caused reflexly by the condition of the abdominal organs; for I have myself had a headache, though not a frontal one, which alternated with nausea. The nausea would last for a few minutes, during which the headache would entirely disappear; then the nausea would leave me, and the headache instantly took its place. After evacuation of the stomach, both the headache and nausea disappeared, showing that in this instance at least they were due to irritation in the stomach. But in many instances no doubt, not only headache but much more serious symptoms may be due to the decomposition of food in the intestinal canal and the absorption of its products. Thus Senator[3] relates a case where a simple gastric catarrh without fever was brought on by eating something which disagreed with the patient. This was followed on the second day by great belching of gas, smelling like sulphuretted hydrogen or rotten eggs. The urine also contained sulphuretted hydrogen. As soon as this occurred the patient collapsed suddenly, and became pale and giddy, with a small, frequent, and compressible pulse. The patient remained conscious, and in a minute and a half or two minutes the collapse passed away. A similar attack came on again during the same day, but after the bowels which had been constipated were opened, the patient rapidly recovered. Senator considers that the collapse was due to poisoning by the sulphuretted hydrogen absorbed from the intestine, and it certainly seems probable that this was one cause of the attack, even if it were not the only one.

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[1] Newbigging, *Edin. Med. and Surg. Journ.*, Jan. 1, 1841.

[2] Ludwig's *Arbeiten aus der physiologischen Anstalt zu Leipzig*, 1867, p. 253.

[3] Senator, *Berliner Klinische Wochenschrift*, 1868, No. 24, p. 254.

Other poisons besides sulphuretted hydrogen may be formed in the alimentary canal and absorbed into the blood, where they exert their deleterious action. Among these may be mentioned butyric acid, which has frequently been found in the stomach in considerable quantities.[1] According to O. Weber[2] it is very poisonous, exerting its action chiefly on the nerve-centres. The nervous symptoms which frequently accompany gastric derangement or disease of the intestines may therefore be frequently occasioned by poisons formed in the alimentary canal in consequence of imperfect digestion.

The administration of a brisk purgative or small doses of Epsom salts thrice a day is a most effectual remedy for frontal headache when combined with constipation; but if the bowels are regular, the morbid processes on which it depends seem to be checked and the headache removed even more effectually by nitro-hydrochloric acid or alkalies given before meals. If the headache is immediately above the eyebrows, the acid is best; but if it is a little higher up, just where the hair begins, the alkalies appear to me to be more effectual. At the same time that the headache is removed, the feelings of sleepiness and weariness which frequently lead the patients to complain that they rise up more tired than they lay down, generally disappear.

Somewhat analogous to the neuralgia of the fifth nerve in Sir Charles Bell's case, or to frontal headache, is the pain which we frequently meet with in persons having decayed teeth. The pain may be felt in the offending tooth itself, but very often it seems to give little or no uneasiness. The patients complain of neuralgic pains above the ear or along the jaw, and will often deny that they have any decayed teeth at all. It would almost seem that neither the irritation in the tooth nor irritation in the intestine alone is sufficient to produce pain, though they do so when acting conjointly; for extraction of the tooth, or stoppage of the cavity with cotton-wool steeped in melted carbolic acid, will often remove the pain although no medicine is given internally, while on the other hand a brisk purgative may also afford relief though the tooth be left untouched. It is best, however, to combine both methods of treatment, and if the tooth is not extracted or stopped, the pain is very apt to return; and it seems to me probable, though I am by no means certain of it, that this recurrence is connected with the renewal of gastric or intestinal irritation. According to Heincken,[1] otalgia may also depend on the presence of irritating matters in the intestine; and Sir Charles Bell observes that accumulations in the colon will give rise to pains in the loins, spermatic cord, or groin. Pain at the lower angle of the scapula is referred by him to disorder and distention of the duodenum. This pain is very often accompanied by flatulence, and is described by patients as a "pain in the pit of the stomach shooting through between the blade-bones," and it is not unfrequently termed by them "windy spasms." It is relieved by rhubarb and alkalies given before meals.

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[1] Kühne, *Physiologische Chemie*, p. 58.

[2] O. Weber, *Deutsche Klinik*, 1864, p. 488.

Having said so much regarding the fæcal contents of the intestine and their local and remote actions, we must now consider a matter of no less importance, viz. the effect of purgatives upon the secretions which are poured into the intestinal tube by the various glands connected with it. The saliva which flows into the mouth from the submaxillary and parotid glands is swallowed and aids the digestion of starchy food in the stomach, and probably the intestine. A part of its active principle, ptyalin, is reabsorbed, and some of it is excreted in the urine;[2] but as we shall here afterwards see, it is probable that another part is excreted again by the salivary glands and thus does its work twice over. This is at present only a probability as regards ptyalin, but it is a certainty in the case of several substances which are excreted by the salivary glands, such as iodide of potassium, for example, which can be detected with great ease. When this substance is swallowed, it is absorbed from the stomach, passes in the blood to the salivary glands, and is excreted by them much more readily than by the kidneys. It again passes down with the saliva to the stomach, is reabsorbed, and again excreted. Thus it may go round and round for a long time without getting entirely out of the body. (See gastro-salivary circulation, Fig. 24.) If we wish to remove it quickly and completely, we must give a purgative so as to prevent its reabsorption from the intestinal canal by causing its speedy expulsion. The same is the case with other iodides, such as those of lead or iron. Iodine has been shown by Bernard to possess the power of making iron pass readily through the salivary glands, the iodide of iron being found in the saliva soon after it has been injected into the blood, while other salts of iron, such as lactate, never make their appearance in it at all.[1] Several years ago iodide of potassium was proposed by MM. Guillot and Melsens as a remedy in cases of lead-poisoning. The lead, they consider, is present in the body in the form of an insoluble compound[2] which it makes with the tissues, but by the administration of iodide of potassium it is rendered soluble. It then finds its way into the circulation, and is excreted by the kidneys and other emunctories. But the iodide of lead is partly excreted by the salivary glands, for M. Malherbe, of Nantes, and Dr. Sieveking have found it in the saliva of persons suffering from lead-poisoning, and who were being treated by iodide of potassium. The lead salt being swallowed with the saliva, is again reabsorbed, and thus the cure is comparatively slow when patients are treated with iodide of potassium alone. I frequently see patients suffering from lead-poisoning brought on by working in white lead, and for some time I have been accustomed to treat them with five grains of iodide of potassium, three times a day, and a sufficient quantity of sulphate of magnesia or other purgative either thrice or once a day, to keep the bowels very freely open, and cause the expulsion of the lead from the alimentary canal as quickly as it is secreted into it. I have not made comparative experiments on the effect of this treatment and of that by iodide of potassium alone, or by purgatives alone, but from what I remember of cases treated by the late Professor Syme with castor-oil, I am fully satisfied with the treatment I now adopt. The same plan would probably prove equally useful in chronic poisoning by copper or mercury.

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[1] Heincken, *De Morbis Nervorum ex Abdomine*, quoted by Sir Charles Bell, op. cit., p. 9.

[2] Cohnheim, *Virchow's Archiv*, xxviii. p. 250.

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[1] Bernard, *Physiologie Expérimentale*, tom. ii. p. 99.

[2] Guillot and Melsens, *Archives Générales de Médecine*, 4th sér. iv. p. 517; and Melsens, *Annales de Chimie*, June 1849.

But the gastro-salivary circle, as we may term it, from stomach to salivary glands and from salivary glands to stomach again, is not the only one in which those metals move. Their circulation in the portal system, or entero-hepatic, as it is termed by Lussana,[2] is still more important. (See Fig. 24.) Iron is eliminated in great part by the bile: copper and manganese appear in it also, according to Albini and Moser,[3] and it seems probable that manganese,

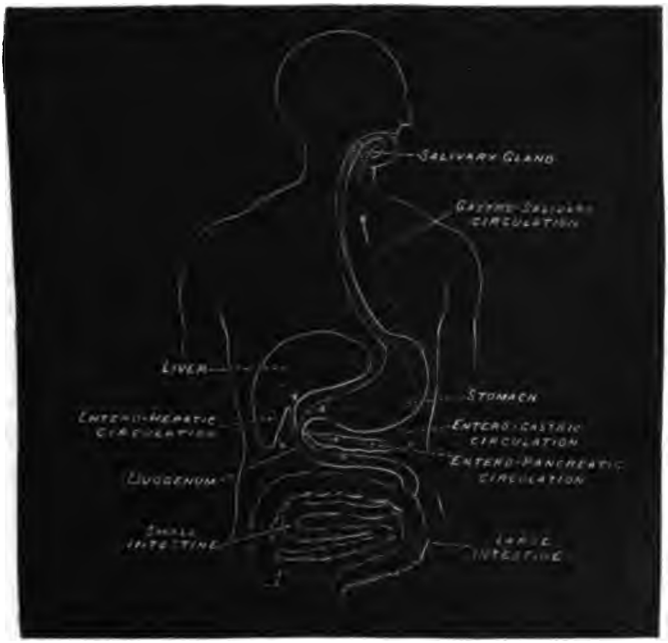
SALIVARY GLAND
GASTRO-SALIVARY CIRCULATION
LIVER
STOMACH
ENTERO-HEPATIC CIRCULATION
ENTERO-GASTRIC CIRCULATION
ENTERO-PANCREATIC CIRCULATION
DUODENUM
SMALL INTESTINE
LARGE INTESTINE

Fig. 24.—Diagram showing the manner in which substances are excreted by one organ and reabsorbed by another, so that they circulate a long while in the organism before being expelled.[1]

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[1] The absorption of substances excreted by the salivary gland is indicated in the figure as taking place in the stomach, and their circulation is called gastro-salivary; but it is very probable that a considerable portion of them passes through the stomach into the intestines, and that *entero-salivary* might be a better term. Similarly, the absorption of bile has been represented as taking place in the duodenum, and that of pancreatic and gastric juices in the jejunum, but this is only to avoid confusion in the drawing, and not to indicate the part of the intestine where absorption really takes place.

[2] Lussana, *Lo Sperimentale*, tom. xxix. 1872.

[3] Quevenne, Albini, and Moser, quoted by Lussana, *Lo Sperimentale*, tom. xix. 1872, pp. 340, 343.

lead, and all the heavy metals pass out of the body by this channel. From the liver they pass into the intestine, are reabsorbed from it, and again pass to the liver and recommence their course. They may be present in considerable quantities in the blood of the portal system without reaching the general circulation or getting a chance of passing out in the urine. They are therefore much more closely locked up in the entero-hepatic circulation than in the gastro-salivary one, for the salivary glands are supplied by the systemic circulation, and any blood which brings lead or any other substance to them must also carry it to the kidneys. The power of the entero-hepatic circulation to retain metals within the body being much greater than that of the gastro-salivary one, it is evident that the beneficial effects of purgatives in lead-poisoning are due to their removing the metal from the portal circulation still more than their action on the gastro-salivary one which has already been discussed. Other poisons, such as curare and probably serpent's venom, may also circulate in considerable quantity in the portal system without reaching the systemic circulation, and probably this is one of the causes, though by no means the only one, which renders these substances to a great extent innocuous when swallowed.[1]

But the circulation of iron, lead, curare, &c., in the portal system, important though it may be, is of far less interest than the circulation of the bile itself. For the sake of convenience I have merely stated that lead, mercury, &c., are excreted in the bile, and have hitherto assumed that bile circulates in a similar way in the portal system, without giving any reason for doing so.

It used to be thought by many that bile was formed in various parts of the body, and was simply excreted by the liver. This view is now given up by most physiologists, who believe that bile is formed by the liver only. But in altering their views regarding the function of this organ they went too far, and supposed that it only formed bile, which, when it had once found its way into the intestine and mixed with the intestinal contents, became decomposed and finally expelled with the fæces. A year or two ago, however, Schiff[2] found that this view of the hepatic functions was too limited, and that the liver removed bile from the blood or *excreted* it as well as formed or *secreted* it.[3] He observed that when all the bile was drawn away from the liver by means of a fistulous opening in the gall-bladder after ligature of the ductus choledochus, the quantity which flowed from the liver rapidly diminished after the fistula had been established, but could again be quickly increased by the simple process of putting bile into the duodenum. The bile was at once absorbed and again excreted by the liver, and it did not make much difference whether the bile just removed from the fistula in a dog was again injected into its duodenum, or whether ox bile was used instead. In the normal state of the animal the liver is always doing two things: it is *forming* new bile, and it is *excreting* old bile which it has received from the intestine by means of the portal vessels. When a biliary fistula is made and the bile is drawn away as fast as it is secreted, none gets into the intestine, and therefore no old bile reaches the liver; consequently, the quantity collected represents only the new bile formed in the liver, and is of course much less than that which would normally pass through the ductus choledochus into the intestine. If all the bile were absorbed there would be no need for the liver to go on forming it, but this is not the case, for only a part of it is reabsorbed, and the remainder is decomposed and excreted with the fæces.

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[1] Lussana, op. cit.

[2] Schiff, *Pflüger's Archiv*, 1870, p. 568.

[3] Although it is not correct to do so, I use the term "secreted" here as synonymous with "formed," for the sake of conveniently distinguishing between the formation of bile in the liver and its removal from the blood.

So long as the liver does its duty properly, and excretes again all the bile which is absorbed by the portal blood from the intestine, very little bile can pass through the organ into the vena cava and thence into the general circulation. But whenever so much bile is taken up from the intestines that the liver cannot excrete it all, it will find its way out of the portal into the systemic circulation, and will exert an injurious action on the nervous system. The same effect will follow anything which diminishes the excreting power of the liver and renders it unable to excrete the normal amount. It is evident that if anything should cause the liver to form more bile than usual at any time, it will have extra work to do in the way of excreting it after its absorption, and there will be more bile circulating in the portal blood for some time afterwards, or at any rate until the extra quantity has been got rid of or compensation has been established by the liver forming less. Many experiments have shown that an abundant supply of food causes the liver to form more bile, and we all know that heavy dinners are apt to cause biliousness. Fasting, on the other hand, diminishes the quantity of bile secreted, and every one knows that if he fasts for a day after taking an especially heavy dinner he may be none the worse for it, but if he dines out every night he is almost sure to become bilious unless he takes measures to prevent it by using purgatives.

It has not yet been shown by direct experiment that the symptoms usually grouped under the head of "biliousness" are due to the presence of an excess of bile in the blood; but the rapidity with which they disappear after the removal of bile from the system, either by vomiting or purgation, renders it extremely probable. Frequently we find that the fit of vomiting which has expelled a quantity of bile is hardly over when the appetite returns, the brownish-white fur disappears from the tongue, the face loses its dingy hue, the languor disappears, the irritability of temper is replaced by equanimity, and stupidity and laziness give place to sprightliness and activity. But vomiting is a disagreeable process, and few submit willingly to it, although it would be well worth while if the same end could be gained by no other means. As most old practitioners have found, however, a mercurial pill and a saline purgative produce all the good effects of vomiting without its trouble and discomfort, and they have long been in the habit of ascribing the beneficial action of the mercury to its "cholagogue" properties. They felt convinced that biliousness was due to bile in the blood, and believed that its removal was due to the liver being stimulated by the mercury to excrete the bile more rapidly. But the careful experiments made by the Edinburgh Committee of the British Association[1] on dogs with biliary fistula showed that neither mercurials nor other purgatives increased the flow of bile from the liver, and these results seemed at first sight to contradict the views entertained by most practitioners regarding their cholagogue action. The contradiction is apparent, but not real, for in the experiments the bile was regularly removed from the body as soon as it was formed, and none of it ever reached the intestine. Consequently, any diminution in the quantity collected simply showed that the liver was forming less. Other experiments have given somewhat different results from those of the Edinburgh Committee, and Röhrig[2] has found that the administration of purgatives, as well as other measures which increase the circulation in the portal system, augment the formation of bile. The important question in regard to the treatment of biliousness, however, is not whether the liver forms more or less new bile, but whether the bile already circulating in the blood is removed from it. The liver may be doing its best to effect this purpose, but it will not succeed if the bile it removes from the portal blood is again absorbed as quickly as it is poured into the intestine. But if the peristaltic action of the whole intestinal canal is quickened by a purgative, the bile will be hurried rapidly onwards and evacuated before there has been time for its reabsorption, and the liver being thus relieved will be able to excrete any bile still remaining in the blood. This result will not be affected by any purgative acting on the large intestine alone, for a considerable part of the bile will in all probability have been absorbed before it gets so far; but any simple purgative or mixture of purgatives which stimulates the duodenum and small intestine as well as the large one will prove most effectual. Now, the green colour which the fæces present after the administration of mercurials, and which is so distinctive that the name of "calomel stools" has been applied to them, has long been regarded as an evidence of bile and appealed to as a proof of the cholagogue action of these remedies. The opponents of this doctrine have declared that the colour was simply caused by the presence of black sulphide of mercury, just as a somewhat similar colour may be occasioned by the presence of a small quantity of sulphide of iron after the administration of mild ferruginous preparations. Their statement has been disproved by Buchheim, who has shown that the colour is really due to bile, and thus established the fact that calomel induces its expulsion from the intestine. It may therefore well be called a cholagogue, and it is evident from what has already been said that it must diminish the quantity circulating in the blood, whatever its effect may be on the amount formed by the liver.

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[1] *Report of the British Association*, 1868, p. 214.

[2] Stricker's *Medicinische Jahrbucher*, 1873, p. 250.

Other substances besides bile are found in calomel stools, and among the most important of these are leucin and tyrosin. These bodies are produced by the action of pancreatic juice on albuminous substances, and their presence, which was discovered by Radziejewski, indicates that the contents of the duodenum and small intestine have been expelled before much absorption has taken place. Now, the duodenum not only contains half-digested food and bile, but also the gastric and pancreatic juices and the ferments to which they owe their activity. It is generally taken for granted that after these ferments have once aided in digesting a meal they are destroyed or evacuated, and no importance, so far as I know, has ever been attached to their reabsorption.

It appears from the experiments of Brücke, who found pepsin in the muscles,[1] that it is reabsorbed, at least in part, and is indeed excreted in the urine, as is also a diastatic ferment derived from the saliva or pancreas.[2] Pancreatic ferments also are probably absorbed, for Hüfner has found ferments possessing like them the properties of digesting fibrin as well as converting starch into sugar in the salivary glands and lungs.[3] If these ferments, then, are poured into the intestine and absorbed from it again in the same way as bile, it seems highly probable that they also are excreted by the same glands which formed them. (See entero-gastric and entero-pancreatic circulations, Fig. 24.) The function of the gastric follicles and pancreas would thus be a double one like that of the liver, and they would constantly excrete the ferments absorbed from the intestine and brought to them by the blood, as well as form new quantities of them to replace those which were carried off in the fæces or destroyed in the process of digestion. This view derives some probability from the observation of Schiff, that after the stomach has already digested a copious meal and become empty its power to digest albumen is almost entirely lost,[4] and the fact noticed by Bernard that when the pancreatic juice is drawn away by means of a fistula, what flows from the gland some time after the operation frequently does not possess the power of digesting albumen like the juice which has been collected immediately after the insertion of the cannula.[5] These facts have been explained in a different way by Schiff and Bernard, but it seems to me that the explanation just given supplements without excluding theirs, and clears up some points which they have not touched.

There is this important difference between the glands just mentioned and the liver, viz. that the bile can circulate in the portal system between the liver and intestine without reaching the systemic circulation, but the gastric and pancreatic ferments absorbed from the intestine cannot reach the stomach and pancreas again without mixing with the general current and the blood, and being conveyed to other organs as well. Pepsin cannot act in an alkaline fluid like the blood, but pancreatic ferment can;

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[1] Brücke, *Sitzungsbericht der Wiener Academie*, 1861, xliii. pp. 622, 619.

[2] Cohnheim, *Virchow's Archiv*, xxviii. p. 250.

[3] Hüfner, *Journal für practischen Chemie*, vol. v. p. 372.

[4] Schiff, *Physiologie de la Digestion*, tom. ii. p. 195.

[5] Bernard, *Physiologie Expérimentale*, tom. ii. p. 229; compare also p. 223, where he states that the juice becomes watery towards the end of digestion.

and although I do not know that any experiments have been made with it, yet Binz and Siegen found that a ferment derived from the liver, and possessing like the pancreatic one a diastatic power, raised the temperature of an animal when injected into it.[1] This rise was due to its action as a ferment, and not to its mere presence in the blood as a foreign body, for it had no action whatever when it was injected after its fermentative power had been destroyed by boiling. It is therefore quite possible that the temperature of the body is normally maintained to some extent by means of the pancreatic ferments circulating in the blood, and if purgatives diminish its quantity in the way I have supposed they will tend to lower the temperature.

It must be remembered that these are only suppositions as yet, and require much further substantiation, but they help us at any rate to form some idea of the way in which purgatives prove useful when given at the commencement of a fever. They also give us some notion of the reason why persons so often take cold after the use of purgatives, and one of the dangers of their administration to old people, who produce little heat at any rate, and can only slowly form new supplies of any ferment once carried away.

It is possible that purgatives have an additional action in remittent and intermittent fevers due to malaria, and even in continued fevers due to other poisons. Lussana supposes that the malarious poison which certainly produces some of its most marked effects on the spleen and liver, circulates like other poisons in the portal circulation.[2] If this hypothesis be correct, purgatives may be productive of benefit by removing part of the poison as well as by lessening the temperature.

The pancreatic and gastric ferments have a very positive and certain use in digesting food in the intestine, even should they not possess the hypothetical action in the blood to which I have just referred; and if they are usually absorbed and excreted again, a constant course of purgatives will seriously diminish their quantity. In consequence of this, the digestion of food will be carried on slowly and imperfectly, and the general health will suffer. But this will only be the case if purgatives are used which act on the whole of the bowels, for those which affect the large intestine only will interfere but slightly with the ferments, a considerable portion of which will probably have been absorbed before they get so far. We can thus perfectly understand how a constant course of blue pill[1] and black draught[2] may have most disastrous consequences, while an aloetic pill may be swallowed nightly for months together, without doing any appreciable harm.

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[1] Siegen, *Ueber die pharmacologischen Eigenschaften von Eucalyptus Globulus.* Inaugural Dissertation. Bonn, 1873, pp. 32, 34.

[2] Lussana, op. cit., p. 358.

The experiments of Moreau and Vulpian, as well as my own, show that a large quantity of fluid is drained away from the blood into the intestine by the action of purgatives, and we can thus readily understand their use in removing fluid in dropsies. The abstraction of so much fluid will tend to empty the blood-vessels, and at the same time the irritation caused by the purgatives will attract a larger proportion of blood to the intestinal vessels, and thus still further lessen the blood-pressure in other parts of the body. The blood being no longer urged onward with the same force, the congestion in any inflamed part diminishes, and the painful throbbing which is felt at every pulsation when certain parts of the body are inflamed will be diminished, or may disappear, at least for a time. The diminished tension in the arteries which purgatives induce is clearly seen from the accompanying sphygmographic tracings, which I owe to the kindness of Mr. Mahomed.

When the kidney is the organ affected, the benefit afforded by purgatives will be twofold, for they both diminish the work it has to do by eliminating water by the bowels, and at the same time lessen congestion, and thus remove an impediment to the proper performance of its function. Accordingly the administration of a purgative such as elaterium is found to lessen and sometimes to remove albumen from the urine, to render the secretion copious even when no diuretic has been given, and greatly to increase the activity of diuretics, which may have been unable to produce any action so long as the bowels were left alone.[3]

In conclusion I give a short *résumé* of the chief points in this paper. Purgatives act by stimulating the secretion of fluid from the intestines, as well as by increasing peristaltic action. They prove useful in many ways. They hurry the food out of the alimentary canal, and thus lessen the injurious effects of over-eating. By expelling irritating substances from the intestine they arrest diarrhœa, and remove headache and other pains, caused either by the abdominal irritation or by the absorption of poisonous matters produced by imperfect digestion and decomposition of food. They relieve biliousness by removing bile, and are most efficient aids in the treatment of chronic poisoning by lead, mercury, or other metals. It is probable that pepsin and pancreatic ferment are absorbed from the intestine and circulate in the blood, where the latter assists in the production of animal heat. They are then secreted anew by the stomach and pancreas, and do their work again. Purgatives lessen their quantity as well as that of the bile; and they thus may be useful in fevers, but they injure old and feeble persons, both by diminishing their calorific power and impairing their digestion. They relieve inflammation by lowering the blood-pressure and thus diminishing congestion; and they prove beneficial in dropsies, both by abstracting water from the blood and diminishing congestion in the kidneys.

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[1] Prout, *Stomach and Renal Diseases*, 5th ed., p. 52.

[2] Pancreatic ferment appears in the fæces after the use of senna. (Radziejewski, Reichert, and Du Bois-Reymond's Archives, 1870, p. 72.)

[3] Geo. Johnson, *Brit. Med. Journal*, 1868, March 7, p. 215.

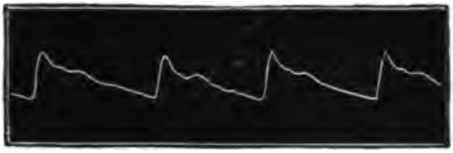

Fig. 25 is a sphygmographic tracing from the pulse of a healthy man before taking a purgative. The somewhat oblique rise, slow descent, and comparatively slight dichrotism of the pulse-wave indicate that the arterial tension is moderately high.

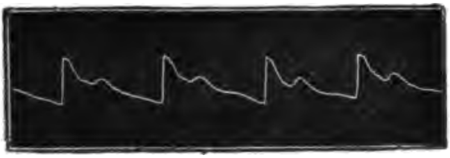

Fig. 26 is a tracing from the same person after the use of a purgative. The more abrupt rise and quicker fall, and decided dichrotism of the pulse-wave, as well as the greater frequency of the pulse, as indicated by the shortness of the waves, show that the tension in the arteries is much less than in Fig. 25.

HOW TO MAKE A POULTICE.

('*The Practitioner*,' VOL. XXIX., *Oct.* 1882.)

At first sight the title of this paper may seem to many of my readers absurd, and the idea that medical men require any instruction in making a poultice preposterous, but I have been led to write it from seeing that many students and some practitioners do not distinguish between the proper methods of making a poultice for surgical and for medical use. Many, perhaps most, students spend a great part of their four years' curriculum in surgical study, and devote a comparatively small portion of it to medicine. This may partly be the reason why they do not learn the best ways of making poultices for the relief of internal pain: but another reason is, that in hospitals poultices are made in certain ways for the sake of cleanliness and economy, and these ways are not always the best possible for private patients, although they may be the best under the conditions which obtain in hospitals. Every one knows the relief which a poultice affords when the finger is inflamed, and has noticed how the painful throbbing diminishes after its application. Most people have noticed also that dipping the finger in cold water has a similar action, and it seems strange to many that the opposite conditions of heat and cold should have a similar effect. The reason probably is that both heat and cold lessen the force of the impulse with which the blood is driven through the dilated arteries of the inflamed parts against the block which exists in the capillaries. Cold causes the afferent arteries to contract, and lessens the impact of the blood by diminishing the quantity sent to the inflamed part; a poultice lessens the impact by dilating the capillaries surrounding the seat of inflammation, and affording a ready side outlet into the veins. In surgical cases we usually use the warmth and moisture of the poultice to act directly on the surface. We therefore make the poultice with crushed linseed or with linseed meal and oil, spread it on some tow and apply it to the skin without anything intervening. But useful though this method may be for wounds, ulcers, and abscesses, it is not the best form of application in cases of inflammation of the thoracic or abdominal viscera, or where spasm is present without inflammation. In such cases we may, no doubt, do some good by applying the poultice to the surface exactly as in surgical diseases. We may draw off some of the blood to the surface; and we may also exercise a reflex action through the nerves upon the vessels of the inflamed organ below, but this will not be so great if we influence the surface only, as when we allow the heat to penetrate to the inflamed or irritated organs themselves. If we apply the poultice directly to the skin it must be allowed to become tolerably cool before the patient can bear it, and thus half its advantage is lost. In order to relieve spasm, as in colic—intestinal, biliary, or renal; to relieve inflammation of the pleura, the lungs, the liver, or other organs, we want to apply the poultice as hot as possible, while we protect the skin from being scalded.

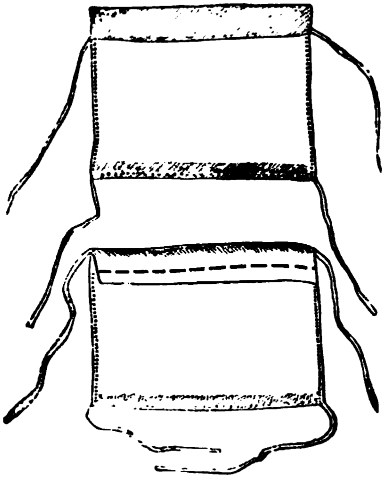

Fig. 27.—The upper figure represents the bag empty; the lower one the bag filled and sewn up.

In order to do this, a flannel bag should be prepared, a convenient size being twelve inches by eight; this should be closed at three edges and open at the fourth; one side of it should be about one inch or one inch and a half longer than the other, as represented in the diagram, and it is convenient also to have four tapes attached at the points which form the corners when the bag is closed, in order to keep the poultice in position. Besides this, another strip of flannel should be prepared of the same breadth as the length of the bag, and long enough to wrap round it once or oftener. Crushed linseed, bowl, and spoon should then be got together, and the spoon and bowl thoroughly heated by means of boiling water; the poultice should then be made with perfectly boiling water, and rather soft. As soon as it is ready, it should be poured into the bag, previously warmed by holding it before the fire; the flap which is formed by the longest side of the bag should now be turned down and fastened in its place by a few long stitches with a needle and thread, it should then be quickly wrapped in the strip of flannel (also previously warmed), and fastened *in situ*, if necessary, by means of the tapes. It may be covered outside with a sheet of cotton wool. In this way the poultice may be applied boiling hot to the skin without burning; the two layers of flannel which are at first dry allow the heat to pass very gradually indeed to the skin; as the moisture of the poultice soaks through them, they become better conductors, and the heat passes more quickly, but the increase is so gradual as not to cause any painful sensations whatever, but only one of soothing and comfort. The poultice also naturally keeps much longer hot, and the necessity for changing it arises much less frequently.

The difference between the effect of a poultice made in the ordinary way, and in the manner just described, is sometimes exceedingly striking. It is, perhaps, less marked in cases of inflammation than in those of spasm. I have seen a patient suffering from intense abdominal pain at once relieved by a poultice made in the way just described, although a succession of poultices made in the ordinary way had been utterly useless. This way of making poultices is one of the minutiæ of medical practice; apparently extremely trivial, but really, I believe, very important. The relief which I have seen afforded by poultices made in this way, and the knowledge that *some* practitioners at least are ignorant of the method, must be my apology for drawing attention to such a trivial detail.

ON THE ACTION OF TONICS.

(*'The Practitioner,'* VOL. XXI., *August*, 1878.)

DURING the heat of summer many people feel limp and weak; and are disposed to sympathise, in imagination, with a collar which has just been washed, but not starched. They apply to their doctor for a tonic, take the medicine which he prescribes, and feel themselves much the better for it. There can be no doubt that the word "tonic" conveys a certain meaning both to doctor and patient, definite enough in one way, but very vague in another. Both understand that the tonic will increase the strength, and remove the weariness and languor, but how it does so probably neither has attempted to find out. On turning to Pereira we find that tonics are defined as agents which increase the tone of the system: but if we inquire further what is meant by tone, and what by the system, it will not be quite so easy to give a definite answer. Perhaps the easiest way of doing this is to take the want of tone, as we term it, for which tonics are administered, and to analyse the various symptoms which we find. First of all, then, there is a feeling of languor and disinclination to exertion, mental or bodily. The person may be roused by some excitement to make considerable exertions, but these are succeeded by a greater than usual feeling of fatigue; the appetite is generally diminished, the pulse is softer and more compressible than usual. Not unfrequently, too, there is less power than usual to resist the attack of disease. Want of tone, then, consists in diminished functional activity of the muscular, nervous, circulatory, and digestive systems, and a tonic is something which will increase this activity. Some tonics, however, act more on one system than another: and so we have vascular tonics, nervous tonics, and digestive tonics; as well as general tonics which seem to influence all the systems together. The functional activity of the body, and of the various organs which compose it, depends upon the combustion which goes on in it and in them, and this combustion may be increased by increasing the nutriment, by quickening oxidation, or by removing more quickly than usual the products of waste, just as a fire may be made to burn more brightly by heaping on coal, by using the bellows, or by raking out the ashes. We may increase the functional activity of the body to a certain extent by increasing the food which a person takes, although there are limits to this, and an excessive quantity of food may prove injurious, just as one may smother a fire by heaping on too much fuel. The first class of tonics, gastric or digestive tonics, enable the patient to take more food, and with a greater relish. The most typical examples of this class are the so-called bitter tonics, such as calumba, quassia, gentian, cascarilla, and hops, either alone or in the form of bitter beer. In the mouth, these drugs produce a transient bitter taste, and increase the secretion of saliva. Thus they will tend to aid the digestion of starchy matters. In the stomach they cause a slight irritation, and the stomach, not having the same power of discriminating sensations that the mouth has, feels this, not as bitterness, but as appetite; unless the dose of the bitter should be too great, or too concentrated, and then it is felt as nausea, and is followed by vomiting. The appetite, however, which small doses excite, induces the patient to take more food, and to take it with greater relish. The increased relish is not to be disregarded. It would not be the same thing if the patient were simply to cram down, against his inclination, the same amount of food which he takes after his appetite has been excited by a tonic. We have not yet succeeded by pharmacological experiment in ascertaining precisely the effect of different emotions upon the stomach, but there can be little doubt that the pleasant feeling resulting from gratified appetite, aids digestion, while that of disgust and satiety interferes with it. Experiment has not shown that bitters increase the secretion of gastric juice in the same way that they do that of saliva, but they have an important action in lessening the tendency to putrefaction in the stomach. It is not impossible that in this way they prevent the formation during digestion of such substances as butyric acid, which is a direct nervous poison, and which, when absorbed into the circulation, would of itself tend to cause weakness and debility. It must not be forgotten that a man may be poisoned by substances formed in his own intestines, as well as by poisons taken into them by the mouth.

We all greatly dread the inhalation of sewer-gas into the lungs, but probably very few of us think that noxious gases formed in the stomach and intestines are readily absorbed by the blood, sometimes producing very serious results, and probably in many other cases leading to weakness and depression, the cause of which is never suspected. Experiment has shown that bitters, if they do not increase the secretion of gastric juice, at least tend to diminish the secretion of mucus, and lessen in this way, as well as by the antiseptic action just mentioned, the fermentation which mucus is apt to set up. It has been found by Köhler that even simple bitters in large doses will raise the blood-pressure by acting on the vaso-motor centre. It is doubtful whether they do so in the small doses usually administered or not, but there are other remedies—so-called vascular tonics—which combine this action to a considerable extent with one upon the stomach. Thus, infusion of digitalis does not greatly increase the secretion of saliva, nor produce a feeling of appetite in the stomach. It acts, after its absorption, upon the vaso-motor centre and upon the heart, rendering the cardiac pulsations slower, and more powerful by contracting the vessels, and thus making the pulse firmer and less compressible. This improvement in the circulation makes itself felt in every organ of the body. Thus the stomach is relieved of congestion, digests the food more easily, is less liable to secrete mucus, and is much less apt to be distended by flatulence. This is perhaps best marked in cases of mitral disease, where the venous congestion which accompanies such a condition often leads to an accumulation of flatus, sometimes termed by patients heart-wind. The pathology of this condition has not been precisely made out, but we must not forget that interchange of gases goes on between the blood in the capillaries of the stomach and the gas contained in its cavity in the same way, though to a much less extent, as between the blood in the capillaries of the lung and the air contained in the pulmonary alveoli. The action of another drug, very different from digitalis, namely, charcoal, upon flatus of the stomach, is very marked, and is usually ascribed in text-books to the power which the charcoal possesses of absorbing gas. But charcoal only does this when it is dry; it loses its power when moist, and it seems incredible that a teaspoonful of charcoal swallowed after a meal and mixed with the contents of the stomach, including perhaps a pint of beer, in addition to all the gastric juice, should, after being churned up with the food in the stomach, absorb so much gas as to have any effect whatever upon the flatulent distention. It seems much more probable that its action is simply mechanical, and that by the small insoluble particles acting upon the mucous membrane, the circulation through it is so stimulated that the blood, flowing more rapidly through the vessels, absorbs and carries away a part at least of the accumulated gases. In respect, then, of its action upon the circulation in the stomach, charcoal may have some similarity to digitalis, but here the similarity ends. Charcoal has no action upon the heart. It cannot restore the balance of the circulation like digitalis, and it has none of the general effects upon the heart and vessels produced by the friction in the wet sheet so well described by Dr. Winternitz.

The improved circulation produced by vascular tonics makes itself felt in the liver and intestines as well as in the stomach. The yellow tinge, indicating biliary congestion, will disappear from the eye, and hæmorrhoidal engorgement will be lessened or removed. The brain and nervous centres, under the influence of a freer current of blood, act more readily and powerfully, thought comes with less effort, and exertion, both mental and bodily, can be continued for a much longer time, without any sense of fatigue. Two conditions also disappear, which, although apparently contradictory, afflict debilitated persons at the same time. These are drowsiness and sleeplessness. Frequently do we hear debilitated patients complain that they are so heavy for sleep that when sitting in their chairs or going about their work an irresistible drowsiness comes over them, and they fall asleep in the midst of an unfinished task, but when they lay their heads on the pillow and seek rest the conditions are at once reversed, drowsiness disappears, they toss about from side to side in the vain attempt to fall asleep, and perhaps it is not until they get up and walk about for a little that they are able to effect their purpose. Both of these conditions, apparently so dissimilar, depend upon the atonic condition of the vessels, so that instead of resisting the pressure of blood within them, they yield before it. In consequence of this the blood gravitates, while they are in an upright position, to the vessels of the abdomen and legs, leaving the brain anæmic and thus inducing sleep. On the other hand, when the horizontal position of the patient allows the blood to flow more easily to the head, the carotids and their branches, instead of contracting and keeping back the blood, allow it to circulate rapidly through the brain, and thus the unfortunate patient, unable to think at the time when he wishes to, is plagued by a rapid and incessant flow of ideas at the very moment when he least desires them. By giving digitalis so as to excite the vaso-motor centre the vessels are made to contract moderately, they no longer yield to the pressure of the blood, and thus the blood is prevented from gravitating to the abdomen and lower limbs, and a free circulation through the brain enables it to discharge its functions satisfactorily, notwithstanding the force of gravity which in the upright position always tends to make it anæmic. Again, when the patient retires to rest, the blood, which tends in a horizontal posture to rush towards the brain, is checked in its course by the carotids and their branches, which under the influence of the vaso-motor centre, stimulated by the vascular tonic, contract and regulate the cerebral circulation so as to allow only sufficient blood to pass to the brain for the purpose of nutrition, but not enough for functional activity.

It seems highly probable that a similar action is exerted upon the vessels of the spinal cord, and that thus the patient feels increased muscular power and is equal to more prolonged exertion.[1] But this is not all, for the subcutaneous cellular tissue, and probably also the muscles themselves, are also benefited by the improved circulation. In the case of the subcutaneous tissue, the improvement is visible and palpable, as it is also in the muscles, though perhaps rather less plainly. In persons suffering from debility, even although there be no cardiac disorder, we find the feet swollen at night, so that the patients complain of their boots being too tight, and the ankles may be seen to pit upon pressure. Under the action of vascular tonics this condition will disappear, the ankles no longer swell, and deep and continuous pressure produces little or no mark upon the skin. The muscles, too, which were previously soft and flabby, seem to undergo a similar change, and become firmer, harder, and more elastic. The mode in which this is effected seems to be twofold—less fluid is poured out from the vessels into the tissues, and more is absorbed from the tissues into them. Thus, instead of plasma stagnating in the intercellular places of the muscles and connective tissue, a brisk circulation is kept up, by which fresh oxygen is supplied, and the products of waste are removed. The tissues are thus put into the most favourable condition for performing their functions, for, as we have already stated, functional activity depends upon the rapidity of combustion which goes on within the tissues or organs. It is quite possible to paralyse a muscle by stopping the supply of blood to it, and thus preventing it from obtaining oxygen, but it is still easier to paralyse the muscle by allowing the products of its own waste to accumulate within it. The easiest way to stop combustion in the muscle is, so to speak, to smother it in its own ash. It has been shown by Kronecker that if we remove the products of waste from a muscle which has been kept in a state of tetanus until it refuses to contract any longer, we can restore its contractile power even although we supply no fresh oxygen to it. In all probability it is the accumulation of the products of waste in the muscles in debilitated persons, which is, to some extent at least, the cause of the languor which they feel. That such is the fact, is, I think, shown by the feeling of comfort which they experience when the legs are gently shampooed, the pressure being always exerted upwards so as to favour the return of the fluids from the tissues. Such a procedure tends to give a lightness and corkiness to the limbs, which can hardly be attributed to any change in the nervous system generally, but must rather be ascribed to the removal from the muscles of those waste products which were partially paralysing them.

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[1] For a fuller explanation of the *modus operandi* of contraction of vessels in the cord in increasing muscular strength, we may refer to a paper on the curative effects of mild and continued counter-irritation of the back in cases of general nervous debility and in certain cases of spinal irritation, by Arthur Gamgee, M.D., F.R.S., in the *Practitioner*, vol. xviii. p. 113.

In talking of the nervous system, of the brain, and of the spinal cord, we have not taken into account this action of vascular tonics increasing combustion and removing waste from the nervous tissue, but probably, although we cannot see it so readily as in the connective tissue and muscles, the same process goes on in the nervous centres, and has much to do with the beneficial action of tonic remedies. I have stated that the action of tonics upon the intercellular fluid in the tissues is probably twofold—that they prevent excessive exudation from the vessels at the same time that they produce increased absorption. The reasons for believing that they lessen the exudation of fluid from the vessels are derived from a consideration of the pathology of œdema as made out by Ranvier. The first experiments upon the subject of œdema were made by Lower, who, in 1680, tied the vena cava, and found that œdema appeared in the lower extremities. A similar condition was noticed by Bouillaud in patients suffering from thrombosis of the iliac veins, and thus it appeared clear that the occurrence of œdema was due to the absorption of the intercellular fluid being prevented by venous congestion. Lower's experiments, however, were repeated by Valsalva, Hewson, and others, without producing œdema, and the cause of its production therefore remained obscure. It was reserved for Ranvier to clear up this question, and to show that the occurrence of œdema usually depended upon increased exudation from the vessels as well as diminished absorption by the veins. He tied the vena cava in the abdomen of a dog, and found, like Valsalva, that œdema did not come on. The quantity of fluid exuding from the arteries was so small that the lymphatics were able to absorb it without any assistance from the veins, and thus it did not accumulate in the tissues, but on cutting the sciatic nerve on one side, intense œdema occurred in the corresponding leg. Venous congestion was equally present in both legs as the vena cava itself had been tied, but in one the nervous influence proceeding to the arteries through the sciatic nerve kept them contracted and prevented the exudation of more fluid than the lymphatics could absorb. In the other leg, however, where the nerve had been paralysed by a division, the vessels dilated, the limb became rosy and warm, and so much fluid was poured out that the lymphatics alone could not absorb it without the aid of the veins. Ranvier next proved that this dilatation of the arteries was due to paralysis of the vaso-motor and not of the motor fibres contained in the sciatic, by cutting, in different experiments, the motor and the vaso-motor nerves in the lumbar region before they had united to form the nervous trunk. When the motor strands were divided, as they issued from the lumbar vertebræ before they had been joined by the sympathetic fibres, complete paralysis of the leg was produced but no œdema occurred; but if, on the other hand, he divided the sympathetic fibres, passing to the sacral plexus, there was no motor paralysis—the animal could still use its limb, but the vessels dilated and œdema occurred.

These experiments show pretty conclusively that dilatation of the vessels by paralysis of the vaso-motor nerves is one factor in the production of œdema. In them, of course, we see in an exaggerated condition the same phenomena which are observed in cases of debility, because in these experiments the vaso-motor nerves were completely paralysed, whereas in our patients they are simply weakened. We may sometimes see very clearly in persons whose vascular system is deficient in tone, the effect of dilated vessels in causing œdema even when there is no great obstruction to the return of blood. Such persons, when walking about in a warm day, with their arms hanging by their sides, sometimes find their hands become so swollen that they can hardly close their fists. The combined effect of heat and exercise upon their already debilitated vascular system, aided by the effect of gravitation, has caused so much fluid to escape into the tissues of their hands, that the veins and lymphatics are together unable to absorb it, and thus the fingers become swollen. The absorption of fluid from the tissues is, like its exudation into them, greatly controlled by the central nervous system. This is shown by some experiments of Goltz and Nasse. The former found that when a fluid was injected under the skin of the back of a frog, it was rapidly absorbed so long as the brain and spinal cord were uninjured, but when they were destroyed, little or no absorption took place. As the ordinary action of the nerve-centres causes absorption to go on, we would naturally expect that any increase in their activity would quicken the absorptive process, and this indeed was actually shown by Nasse to occur. It is well known that irritation of a sensory nerve stimulates the vaso-motor centre reflexly, and causes the vessels to contract. But, in addition to this action, Nasse found that irritation of a sensory nerve also caused increased absorption. It has not yet, so far as I know, been proved experimentally that such a drug as digitalis, which undoubtedly stimulates the vaso-motor centres, has a similar action to stimulation of that centre by irritation of a sensory nerve. Some time ago I made a few experiments upon this subject, but from imperfect graduation of the dose, the results I obtained were unsatisfactory, as the heart was too much affected by the drug, and the circulation became entirely arrested. There seems, however, no reason to believe that direct stimulation of the vaso-motor centre by digitalis will have a different action from its reflex stimulation through a sensory nerve, and we may therefore, I think, confidently assume that vascular tonics like digitalis increase the absorption of fluid from the tissues. They will thus remove the products of waste, and by keeping up a constant circulation of fresh intercellular fluid will assist combustion and functional activity in the tissues.

Another most valuable tonic, strychnia, has an action even more widely extended over the body than digitalis. It is at once a gastric, vascular, and nervous tonic. It aids digestion like other simple bitters in the way already described. It has, with the exception of quinine, a more powerful action than most other bitters in preventing putrefaction. It excites the sensibility of the vaso-motor centre, thus exerting a beneficial effect upon the circulation, and likewise directly stimulates the nervous tissue of the spinal cord itself. So great is its effect upon the vaso-motor centre that by its means physiologists have discovered that instead of being confined to the medulla oblongata, as was formerly imagined, this centre extends down the spinal cord. It has just been said that an impression made upon the sensory nerves, reflexly stimulates the vaso-motor centre, contracting the vessels and raising the blood-pressure, but when a cut is made across the spinal cord just below the medulla oblongata this result is not produced. From this experiment it has been concluded that the vaso-motor centre was entirely confined to the medulla oblongata above the place of section; but if a little strychnia be now injected into the veins of an animal in which the cord has been thus divided, and a sensory nerve be then irritated, the vessels will contract and the pressure of the blood will rise. It thus becomes evident that the vaso-motor centre extends down the cord from the medulla, although its spinal portion is so feebly developed that under ordinary circumstances it has no power to contract the vessels when reflexly excited by stimulation of the sensory nerve. But strychnia has the power to increase its excitability so much, that reflex stimulation in this way will produce through it a decided effect. Now when we consider that sensory impulses are proceeding every moment from the skin to the vaso-motor centre, we can readily perceive how a slight increase in susceptibility produced by strychnia will have a wonderful effect in raising the tone of the vessels, and aiding the circulation. The mode in which quinine acts is not so clear, but we know from observation, that it also, in small doses, renders the pulse stronger and less compressible.

We have now seen how tonics may increase the quantity of nutriment taken into the body generally, how by their action on the vessels they quicken the circulation of inter-cellular fluid in the tissues, and by thus aiding its oxidation, and removing the products of waste, they greatly increase the functional activity of the various organs of the body.

We have now to consider how they affect the removal of waste from the body generally. The inter-cellular fluid in which these products are contained is absorbed into the general circulation by the veins and lymphatics. Unless some provision were made for its removal, it would soon accumulate in the blood and arrest the functional activity of the various tissues, beginning with the most susceptible of all, the nervous tissue, and causing death. But these substances in all probability undergo further oxidation in the blood after their absorption and before they are finally excreted. This oxidation will be assisted if the respiratory movements by which oxygen is taken into the lungs are rendered deeper and more frequent, and also if the blood itself should acquire greater power to absorb this oxygen. Now strychnia has an action upon the respiratory centre in the medulla oblongata similar to that which it exerts upon the vaso-motor centre, and under its action respiratory movements become both quicker and deeper. No such effect is produced on the medulla by such a tonic as iron, but under the influence of this remedy the blood corpuscles not only become greatly increased in number, as was shown by Dr. Gowers in a paper in the *Practitioner*, vol. xx. p. 1, but they also contain a greater amount of hæmoglobin. Oxygen is thus more rapidly carried from the lungs to the tissues, and the process of combustion can thus go on more readily, both in the tissues themselves and in the minute blood-vessels into which the products of waste have been absorbed.

The rise in blood-pressure which occurs under the influence of tonics not only affords, as we have just seen, the most favourable conditions for oxidation in the tissues and for the removal of the products of waste from them, but it also assists in their elimination from the body itself. It has been shown by Ludwig and his scholars that the secretion of urine is, generally speaking, proportional to the pressure of blood in the renal glomeruli, and thus the pressure would rise along with the tension in the vascular system generally. The contraction of the vessels which tonics produce will therefore raise the tension in the kidney as well as in other parts of the body, and thus aid in the elimination of the products of waste.

From what has just been said, then, it would appear that strychnia or nux vomica is one of the most valuable tonics which we possess. When combined with nitro-hydro-chloric acid it is perhaps one of the most efficient remedies that we can give for the debility which is so often noticed in warm weather, and when the ordinary tonics, such as gentian, calumba, cascarilla, or quinine do not produce the desired results, the addition of a little nux vomica or strychnia to them may give us the wished-for effect.

ON THE ACTION OF ALTERATIVES.

(*'The Practitioner' for September* 1876.)

If we were to take the word alterative in its widest sense, it would embrace all the medicines we employ; for all of them are used for the purpose of producing some alteration or other in the bodies of those to whom they are administered. Nor is the alteration confined to them alone; it may also influence their offspring, and Buchheim very truly says that we are quite justified in calculating what the influence of a purgative, which we take to-day, will be upon the bodily and mental well-being of our great-grandchildren. I know a lady who believes that ill-temper in children is due to illness, and whenever any one of her own family was naughty during their childhood, she invariably administered a dose of Gregory's mixture to the offender. The practice was most successful, mind and body were purged together, the ill-temper fled with the evacuation of the bowels, and a wholesome dread lest the dose should be repeated co-operated with its physical action to prevent a return of the naughty fit. Who shall say that the temper and disposition as well as the bodily health of this lady's children and grandchildren are not altered for the better by her judicious use of rhubarb and magnesia, and who shall deny to Gregory's mixture an honourable place among the alteratives? And yet if we saw its name appearing in a list of them we would be very apt to say that it was like Saul among the prophets—it had a perfect right to be there, but it would have been better elsewhere—Epsom salts, jalap, and other purgatives being more suitable companions for it than iodide of potassium, arsenic, and the other remedies to which we usually give the name of alteratives. For custom has now excluded from this class all medicines which give external signs of vigorous action by purgation, sweating, or diuresis, and has restricted the term to such remedies as do their work slowly and secretly but none the less effectually. In short, we use the word alteratives very much as a cloak for our ignorance. For example, a patient comes to us complaining of more or less constant headache just above the eyebrows. We generally associate such frontal headache with disturbances in the digestive apparatus, and we accordingly at once inquire into the condition of the tongue, appetite, and bowels. We find that the tongue is fairly clean, the appetite fairly good, but the bowels are constipated. We give a drachm of sulphate of magnesia three times a day, get the bowels to act properly, and in four cases out of five the headache disappears. But in the fifth case it remains, although the constipation has been removed and the evacuations are free. We order the medicine to be continued, but in addition give a calomel and rhubarb, or a blue pill at night, and now we obtain the desired effect. The sulphate of magnesia alone was unable to remove the cause of the headache, but the mercury seems to touch the right spot and put things in proper order again, so that no farther pain may be experienced for a good while to come.

What the probable reason of this is I will mention by and by, but at present I wish to contrast the action of these two remedies with that of a third.

Suppose, then, that we see, as we very often do, a patient complaining of pain above the eyebrows but with all the functions of the alimentary canal apparently in good order. These cases are frequently met with amongst girls from fourteen to twenty. The tongue is fairly clean and moist, although it may be slightly marked with the teeth at the edges, there is no complaint of wind in the stomach, there may be no pain after eating, and the bowels may be quite regular. We order them ten minims of dilute nitro-hydrochloric acid before meals and the pain disappears, just as it did in the other cases after salts or calomel. But here we have no sign of action produced by our remedy except the disappearance of the patient's complaint. There is no purgation by which to explain the results: we cannot say that the morbid matter which caused the pain has been forcibly removed from the alimentary canal or from the blood. Our remedy has corrected the nutrition of the body in some mysterious and secret way, as mysterious and secret as the manner in which a hearty meal sustains the nutrition, and we class our medicine among the alteratives just as we class the substances composing the meal among the nutritives.

Or let us take another example. The skin, which ought to be soft and uniform in colour and smooth on the surface, becomes covered with round reddish spots, on which the epidermis accumulates, giving them a somewhat silvery hue, and from which it falls in scales. We give arsenic internally, and even without the use of any local application to the skin, although these are undoubtedly useful, we may find the scales fall off, the reddened spots disappear and the skin assume its normal appearance.

Here again our medicine acts in the same slow, secret way, causing the skin once more to return to its proper healthy mode of nutrition, or, in other words, causing the cells which compose it to take up, assimilate, and use in the proper way the nutritive, materials brought to it.

Now I find the question, How do alteratives act? to be an extremely difficult one; and I do not feel at all certain that I shall be able to give the correct answer to it. But the difficulty of the question is not merely personal—it has been felt by every writer of a textbook on Materia Medica; and on looking through the standard works on the subject I see that an explanation of the mode of action of alteratives is rarely or never attempted.

I have, therefore, less delicacy in bringing the subject under notice, as my attempt to explain their action, even though incorrectly, may, by awaking criticism, and directing general thought to this question, lead some to a better solution of it than the one at which I have arrived.

We have already seen that there is a striking resemblance between nutritives and alteratives in the quietness with which they effect their purpose; and I believe that it will greatly assist our comprehension of the mode of action of those remedies which alter nutrition if we first take a glance at the way in which nutrition is normally maintained. A railway navvy, working with pickaxe, shovel, and barrow, striking hard into the firm earth or the solid rock, lifting heavy weights and wheeling heavy loads, violently exerting every muscle in his body and perspiring at every pore, would soon exhaust both his muscles and glands, if he were to abstain entirely from food and drink, and not replace the solid matter and liquids which he is continually losing while at work. He would get thinner and weaker, and would quickly die; while if he has an abundant supply of bread and butter, beefsteak and salt, with as much water as he wants, he may go on working day after day, week after week, and month after month, without his strength undergoing the least diminution or his body becoming lighter by even a single ounce. It may be remarked that I have put salt here in the list of foods, and I draw special attention to it, because the quantity of it which we use is so much less than that of the other sorts of food that we are apt to forget it. And all the more so because we get it added to our bread by the baker, or to our butter by the dairyman, or get it thrown on our beefsteak while it is cooking, and thus forget that we may take a good deal during the day although we never put a particle of it on our plates during meals. And yet the simple experiment which we find in every boy's book of chemical tricks, of telling into which basin of water a hand has been put by the turbidity which occurs on testing it with nitrate of silver, shows how constantly we are losing salt from the skin; and if we put our tongue to our hand after we have been perspiring freely, the taste will convince us that the quantity of salt we lose by the skin is not inconsiderable, even if we were to leave out of account the much greater loss which takes place by the urine. We find no difficulty in understanding how the salt lost by the various emunctories is replaced by that which we take into our stomach. For salt dissolves readily in water, and when in a state of solution it diffuses easily through animal membranes. Thus when it is taken into the stomach it is soon dissolved by the liquids it finds there, is absorbed into the blood-vessels, and travels with the blood to all parts of the body.

But with regard to the bread, butter, and beefsteak the matter is not so easy. It is true that fats may be made to pass through animal membranes, but not very easily, and the difficulty is greater when the membranes are moist, as they are in the body. Starch, of which the bread is composed, and albuminous substances, such as those of the beefsteak, hardly pass at all, and in order to be made available for the wants of the body, they must first be rendered soluble. Nor is this all. In order to render them soluble they must undergo a chemical change, the starch of the bread being converted into grape sugar, the myosin of the beef-steak into soluble albumen and peptones, and the butter being partially split up into fatty acids and glycerine. Now all these changes can be effected by the chemist in his laboratory, or by the manufacturer in his factory, but both of them require to use much force in the shape of heat to pull apart the atoms of the starch, albumen, or fat, and allow them to enter into new combinations. Thus starch is converted commercially into grape sugar by boiling it with sulphuric acid; albumen into peptone, not by simply boiling it, but by boiling it under pressure in a Papin's digester with dilute hydrochloric acid; and fat is split up into fatty acid and glycerine by treating it with superheated steam. But the processes which require so much expenditure of heat—heat which might drive a railway-engine or a steam-hammer—are all carried on within the body at a gentle temperature by means of certain ferments. These ferments possess the wonderful power of doing, without any apparent effort, the same work of decomposing bodies, as only a considerable heat could do without them. In fact we might compare them to such things as nitro-glycerine, of which a small quantity will shiver into fragments a solid rock on which many and heavy blows of a powerful steam-hammer would have made but a slight impression. The ferments in the alimentary canal are pepsine, the pancreatic ferments, and the ferments of the intestinal juice. Pepsine differs from the other two in only acting in an acid solution, while the others act in neutral or alkaline ones, and this I consider to be a very important difference indeed, as you will presently see.

Although these ferments split up starch and albumen with such force, they do not seem to be used up in doing so, and a very small quantity of ferment will go on for a long time without seeming to be exhausted by its work. Now no manufacturer would ever think of throwing away anything with such valuable properties as this, and yet we used to imagine that nature improvidently threw them away, and allowed them to be excreted by the fæces. Some time ago, however, it was found by Brücke that the whole of the pepsine was not voided in this way, for part of it was absorbed, and could be detected in the muscles and in the urine. Von Wittich also found a ferment in the liver and bile, which, like that of the pancreas, would convert starch or glycogen into sugar; and Hüfner found ferments which also possessed, like that of the pancreas, the double power of digesting fibrine, and converting starch into sugar in the lungs. From these facts I ventured some time ago, in a paper on the Action of Purgative Medicines, which I published in the *Practitioner*, to advance the hypothesis that the digestive ferments were reabsorbed from the intestinal canal, and being again carried by the blood to their respective glands, did duty over and over again. For if bile is either injected into the intestine or injected under the skin, it passes to the liver and is excreted by it; urea injected into the blood goes to the kidneys, and thus it seems probable that pepsine, like these substances, will find the way to its own peculiar secreting organ, the stomach; and pancreatine to the pancreas.

But if this notion be correct, there must be pepsine and pancreatine very constantly in the blood.[1] Now this will not matter very much in the case of pepsine, because it will only act in acid solutions; but the case is different with pancreatine, which acts in neutral and alkaline solutions, and there seems to be nothing to prevent it from acting on the muscles and other albuminous tissues.

And, indeed, when we come to think of it, how can the albuminous substances of the body be split up and consumed, excepting by the aid of ferments? If we lay a piece of raw meat on the fire, it does not burn readily, and the fire must be pretty hot to consume it entirely; and yet, for my own part, I used to accept it as a fact, that the albuminous substances of the body were oxidised into urea and carbonic acid, without ever thinking how this combustion was effected. But, as we have seen that these ferments possess the same disintegrating power as heat, and as we have seen, moreover, that they have been found in various tissues of the body, I think we may assume that they are the means by which the tissues become broken up and finally oxidised.

According to this view, then, the whole process of nutrition is carried on by means of ferments. Through their agency the food is rendered soluble, so as to be fitted for building up the tissues, and by their agency, too, the tissues themselves are also, although more slowly, broken down. It is obvious, then, that any alteration in the quantity or quality of the ferments in the intestine or blood will greatly influence nutrition, and this brings us to the question, How do alteratives act?

And, first of all, we will consider the action of such alteratives as not improbably act upon the ferments in the intestine. I have already alluded to the similarity between the effects of nitrohydrochloric acid and sulphate of magnesia, either with or without a blue pill. Now sulphate of magnesia excites a copious secretion, washes out the intestine, and carries away some of the bile also. But it has probably much less effect upon the duodenum than mercury has, and thus does not greatly hinder bile, which has been thrown by the liver into that part of the intestinal canal, from being reabsorbed. Mercury, on the other hand, probably excites the duodenum to active peristaltic motions, the bile is hurried downwards and washed out, without any time being allowed for reabsorption. Now, according to my supposition, the ferments contained in the duodenum will share the fate of the bile—they will be swept out of the body in the fæcal evacuations, and consequently the quantity in the blood will be diminished. The tissue change which these produce in the body will also be lessened, and thus we can see how purgatives, and especially mercurial and saline purgatives combined, may be useful at the commencement of a fever.

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[1] When this paper was written little was known regarding the possible reconversion of ferments into zymogens. D'Arcy Power and I have found pancreatine in the urine. (*St. Bartholomew's Hospital Reports*, 1877, vol. xiii. p. 300.)

We can also see how people may readily catch cold after the use of purgatives, and how these remedies are specially depressing to old people, whose heat-producing powers are already low, and who probably have difficulty in again forming new ferments to replace those they have lost.

It is not easy to say precisely in what way nitrohydrochloric acid will affect the ferments in the duodenum and liver, but that it does do so is, I think, shown both by its effect in frontal headache, without either dyspepsia or yellowness of the skin, or conjunctiva, and by its use in oxaluria.

In an interesting paper published in Vol. II. of the St. Bartholomew Hospital Reports, Dr. Dyce Duckworth showed that the urine of patients, presenting no other symptoms than a tongue fissured longitudinally, and great depression of spirits, was generally found on examination to present the white hummocky cloud characteristic of oxalate of lime, and on microscopic examination to display numerous crystals of this substance. The oxalate of lime, in such cases, frequently alternates with a sediment of urates. Under the use of nitrohydrochloric acid, the patients recover their spirits, and the oxalate of lime disappears.

Now the alternation of lithates with oxalates is, I think, very suggestive, and points to the liver as the part affected. For it would appear that it is to a great extent in the liver that such albuminous matters as are to be used up at once, and are not to form permanent tissue, are broken up. Thus a meal of beefsteak alone will yield, in the liver of a dog, glycogen, and nitrogenous bodies which usually are converted into urea, but which, if imperfectly oxidized, will probably appear as urates. Now if the albumen is split up too quickly, as it would be by too much ferment in the liver, we would naturally expect the products of decomposition to be less thoroughly oxidized than they would otherwise be, and according as one or other took the available oxygen, so would be the waste product. If the glycogen got the oxygen, the nitrogenous products would be imperfectly oxidized, and lithates would appear; if the nitrogenous products got the oxygen, the glycogen would be more or less deprived of it, and thus, instead of undergoing complete combustion into carbonic acid and water, sugar might appear in the urine, or products of imperfect combustion, such as oxalic acid, might be formed. Lithates appear in the urine after a heavy dinner with wine, or some other cause of digestive disturbance, whereby we may suppose the decomposition of albuminous matter in the liver to be increased, and they also appear after violent bodily exercise, which will increase the decomposition of albumen in the muscles.

It would be a matter of much interest to observe whether nitrohydrochloric acid lessens the urates in the second case, though undoubtedly it would be a work of considerable difficulty. For my own part I am inclined to think that nitrohydrochloric acid acts chiefly in the intestine and liver, and slightly, if at all, in the tissues.

There are other alteratives which have little or no action in the intestine, but have a powerful influence upon the tissues generally. They *may* have an action, and very often have one, upon the changes which go on in the liver, but they do not all have it.

Let us now take a glance at some of these alteratives more particularly; and as time will not permit me to enter into a lengthened discussion of the mode of action of each, I will content myself with a few remarks. The use of potash is seen *par excellence* in gout, not merely as a remedy, but as a prophylactic. A very gouty old gentleman told me that by two methods he had succeeded in warding off an attack for a long time. The first of these was to drink a large quantity of water early in the morning. "Too little water," said he, "is a great cause of gout; and whenever you get gouty patients in the upper classes, always ask them how much water they drink. You will generally find that they tell you, We take a small cup of tea in the morning, and a small cup of coffee at night; and this is all the water they take, except what they get in the shape of wine and beer, or brandy and soda. Water, pure and simple, many of them never touch; in such persons gout may often be warded off by simply washing out their tissues. Give them a large draught of water the first thing in the morning, and make them take more water and less wine at meals.

"But if this is not enough, and the gout still threatens, give them 30 grains of bicarbonate of potash, and 20 of nitrate, in a large tumbler of water."

Now colchicum, as we all know, is useful in gout, and it used to be supposed that it was so by increasing the elimination of uric acid. But this is not the case, for Garrod and Parkes have shown that the elimination of uric acid is rather diminished by it. The explanation I would give of its action is that it affects the ferments by whose action the uric acid is formed, and thus by lessening its formation produces somewhat the same effect as increasing elimination. Iodide of potassium has a special action on the lymphatic system, and it is in affections of this system that we see its beneficial effects most clearly. For the fasciæ and other fibrous structures are nothing but lymphatic pumps, pumping up the waste material from the muscles and sending it on into the lymphatic trunks (p. 333).

It has been supposed that the action of iodides is owing to the chlorine already in the body having a stronger affinity for bases than iodine, and thus setting the iodide free. If this were the case we should expect that the effect of an iodide would be greater when much chlorine is present in the body; in this case the iodine would be more readily freed. The action of chloral is said by Liebreich to depend on the liberation of chloroform in the blood by the action of the alkalis contained in it, and when talking with him he told me that chloral was apt to lose its effect when given for a long time, unless the alkalinity of the blood was kept up by the administration of alkalis. It is possible that in the same way iodide of potassium may become less powerful, if we neglect to keep up the chlorides in the body, and that its action may be increased by the administration of common salt. It is only lately that this thought occurred to me, and I have not yet had an opportunity of testing it, but perhaps some here may already have done so.

In a case of epilepsy, however, I once tried common salt with complete success, the fits being entirely stopped. In the next one it had no effect. Since thinking over the subject of alteratives, it occurred to me that possibly the success in the first case was due to the previous administration of a bromide, but unfortunately

I have lost the notes of the case and cannot now ascertain if this were so or not.

Mercury seems to have as special an action on the albuminous tissues as iodides have on the lymphatics, and the breaking down of lymph by it in iritis seems more to resemble the digestion of fibrine by pepsine, or pancreatine, than anything in inorganic chemistry. This special affection of mercury and iodides for different structures may give us a key to the proper employment of these drugs singly or in combination. Are the albuminous tissues to be acted on?—give mercury. Are the lymphatics to be set in action, either for the purpose of carrying away the albuminous *débris* resulting from the effect of mercury, or for the absorption of enlarged glands, or removal of pain, hardening, &c., connected with tendinous or aponeurotic structures?—give iodine.

Time will not permit me to enter upon the actions of phosphorus, arsenic, and antimony, or to show the wonderful resemblance between them, and I would simply, before concluding, recapitulate one or two of the chief points in this paper, as it may assist the discussion upon it.

All medicines may be called alterative, but the name is specially applied to those which imperceptibly modify nutrition.

Nutrition is carried on in the intestine, and probably in the body, by means of ferments.

Alteratives probably modify nutrition by modifying the action of these ferments.

Nitrohydrochloric acid probably acts in headache, and also in the depression of spirits associated with oxaluria, by modifying the action of ferments in the intestine or liver.

Lithates are probably formed in the liver, and also in the muscles. The question arises—Is nitrohydrochloric acid useful only when the lithates arise from disorders of the liver and digestion; or is it also useful when the lithates arise from other causes?

Colchicum is probably useful in gout, by diminishing the production of uric acid.

Iodide of potassium acts on the lymphatics.

Mercury acts on the albuminous solids.

Is the action of iodides or bromides increased by giving salt?

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INDIGESTION AS A CAUSE OF NERVOUS DEPRESSION.

(‘*The Practitioner*,’ vol. xxv., October and November, 1880.)

To most men who are engaged in intellectual work, an autumn holiday has become a matter of necessity, and is not to be regarded as a mere luxury. During eleven months of the year many who are engaged in brain work systematically overtax themselves, trusting to the month's holiday to bring them again into proper working order. Formerly this was not the case. Men seemed to be able to go on, not only month after month, but year after year, without any vacation at all. The circumstances under which they lived were different from those which exist now. The very means which facilitate our holidays—the network of railway which puts us into complete and easy communication with any part of the Continent of Europe, or the quick ocean steamers which enable us to enjoy half of a six weeks' holiday on the other side of the Atlantic, as well as the telegraphic communications which will warn us in a moment, even at the most distant point of our travels, of any urgent necessity for immediate return—all these are the very means which increase our labour during the greater part of the year. We live at high pressure, letters and telegrams keep us constantly on the *qui vive*, express trains hurry us miles away from home in the morning and back again in the evening, and the pressure of competition is so great that few men can afford either to take their work easily or to modify the constant strain of it by breaks of a day or two at a time. Wearied and exhausted, the hard-worked man goes off for his autumn holiday and, if he can, will spend most of it in the open air, either yachting, walking by the sea-shore, strolling in the country, shooting on the moors, or climbing the Welsh hills or the Swiss mountains. After a month spent in any of these ways, the brain-worker comes back to town feeling himself a different man. Instead of his work being a slavery to him, as it was before he started, he feels it to be a pleasure; he gets through it with ease, and feels not only that the amount he can accomplish is greatly increased, but that the quality is also improved. Perhaps for a short time after his return he is hardly in a condition to do brain-work at all. He sits down to his desk but feels cramped in the unaccustomed posture, and he would rather work off the superabundant energy within him by a long walk or a stiff climb, than restrain it with difficulty to the simple task of driving a quill. After a week or two he settles down and works steadily along with comfort and ease for a couple of months or more, when he again begins to sink below par. His apprehension is no longer so acute, his power of concentration is diminished, he can no longer fix his attention for any length of time upon one subject without a severe effort. His mental vision becomes less perspicuous, his ideas succeed each other more slowly, and find expression with greater difficulty, so that he communicates his thoughts with less fluency and less clearness than before. His temper, too, undergoes a change. Instead of regarding the daily occurrences of life with equanimity, and making the best of what cannot be helped; irritation so slight as to be unfelt at other times provokes him to anger or peevishness, and even when he possesses sufficient self-control to restrain his feelings and prevent them from being manifested outwardly, to the annoyance of his friends or neighbours, the very effort of restraint seems to increase the internal irritation, until at last it either explodes in an ebullition of wrath on some comparatively trivial circumstance, or tells upon the digestion and nervous functions of the individual himself, diminishing the appetite or causing intense muscular weariness. In others, again, we find that along with, or taking the place of, irritability there is great mental depression. Everything is looked at from a gloomy point of view, himself, his friends, and his surroundings. He does not feel equal to his work; nothing that he does pleases him; he is apt to become distrustful of himself and jealous of others; apt to think that his friends are slighting him, or to fancy that he has offended them. Even when all external circumstances leave nothing to be desired, the unfortunate victim cannot enjoy life. His mind is occupied with gloomy forebodings of miseries to come, or he becomes a prey to melancholy and depression without any apparent reason. This melancholy weighs most deeply upon him during the night, and if he happens to wake in the small hours of the morning, as he not unfrequently does, life seems not worth living, but a burden of which he would willingly be quit. Melancholy is at times associated with sleeplessness, and then the two evils re-act upon and increase each other. For this causeless sorrow has a similar effect to that of real sorrow. As Shakespeare says:

> "Sorrow's weight doth heavier grow,
> Through debt that bankrupt sleep doth sorrow owe."

At other times, instead of sleeplessness there is an abnormal tendency to drowsiness, which sometimes comes on almost irresistibly at the very moment when some important work, requiring all the best powers of the intellect, has to be performed, and rendering its performance either imperfect or completely impossible. As soon as the person goes to bed he falls asleep, and sleeps like a log till morning, when he rises with difficulty, feeling almost more exhausted than when he went to bed the night before, with perhaps a little tightness or pain over the forehead, eyes, or temples. After breakfast he feels somewhat revived, and will work comfortably for a short time, but about one and a half or two hours after the meal weariness overtakes him, again passing off after it has lasted a variable time. During the day this is repeated, fits of more or less energy alternating with periods of languor and exhaustion. These languid fits may be noticed two or three hours after lunch or dinner, and the sufferer is not unfrequently tempted to have recourse to the decanter of sherry or the brandy-bottle, not only to obtain relief from the feeling of personal discomfort, but to supply the energy which he feels to be necessary to enable him to do the work he has in hand. But this is a ruinous course to adopt, for not only does it pave the way to habits of confirmed drunkenness, and leads to tissue changes which will ultimately abolish the functional activity of the most important organs of the body, and bring the individual to a premature grave; it enables him to do his work only imperfectly at the time. After an application to the decanter or bottle his powers may seem to himself to be as great or greater than usual, but this is to a considerable extent a subjective feeling only, as he will probably be able to discover by results.

Now how is it that such a change has come over the man in a few months, so that he seems to be a different individual from the one who returned, bright and lively, from his autumn holiday?

How is it that the even-tempered man has become irritable, the clear-headed man muddled, the active lazy, the sober perhaps a tippler, and the cheerful and buoyant depressed and melancholy; that the brain performs all its functions with difficulty, and the mind is so altered that it does not seem to be that of the same individual? And yet, after all, the man is the same, and the brain the same, at least in its essential structure, as it was a few months ago, and as it will be in a few months more, after another holiday has again put it in good working order. What has happened to it in the mean time to cause such a dreadful alteration? Not only does the brain seem exhausted, but the whole system appears to be languid and weak; instead of the man being able for a twenty or thirty miles walk, one of a mile or two will produce fatigue, and sometimes an intense languor is felt without any exertion at all. And yet all this time he may have been trying to keep up his strength. He takes butcher's meat three times a day, perhaps also strong soups, to say nothing of wine, or brandy and soda to pick him up. His tissues ought to be getting sufficient nourishment to enable them to do their work, and yet it is evident that they are not in a condition to do so. The man, and very likely his friends also, wonder at his condition, and when he goes to his medical attendant to describe his case he says, "I take all sorts of strengthening things, and yet I feel so weak." If, instead of using these words, he were to say "*Because* I take all sorts of strengthening things I feel so weak," he would express a part at least of the truth. He, and his friends who wonder with him, forget that all the functions of life are more or less processes of combustion, and that they are subject to laws similar to those which regulate the burning of the coal in our fireplaces. Two things are necessary for the combustion, fuel and oxygen; sometimes it is the fuel that fails, but not unfrequently it is the oxygen. Sometimes, no doubt, our fires go out because the fuel is quite exhausted, but this is very rarely the case. It is only under very exceptional circumstances that we find a fire burned away so completely as to leave nothing but ash. Almost invariably some fuel still remains—often, indeed, enough to make up a good fire when properly put together. If we sift the ashes from the grate we generally find a quantity of cinders, sufficient to make a fire, and these have ceased to burn because they were unprovided with oxygen, which was prevented from reaching them by the ashes with which they were covered.

The reason why our fires burn low, or go out altogether, either is that we put on too much coal, or that we allow them to be smothered in ashes. It is the child who pokes the fire from the top to break the coal and make it burn faster; the wise man pokes it from below so as to rake out the ashes and allow free access of oxygen. And so it is with the functions of life, only that these being less understood, many a man acts in regard to them as the child does to the fire. The man thinks that his brain is not acting because he has not supplied it with sufficient food. He takes meat three times a day, and beef tea, to supply its wants, as he thinks, and he puts in a poker to stir it up in the shape of a glass of sherry or a nip from the brandy-bottle. And yet all the time, what his brain is suffering from is not lack of fuel, but accumulation of ash, and the more he continues to cram himself with food, and to supply himself with stimulants, although they may help him for the moment, the worse does he ultimately become, just as the child's breaking the coal may cause a temporary blaze, but allows the fire all the more quickly to become smothered in ashes. It would seem that vital processes are much more readily arrested by the accumulation of waste products within the organs of the body than by the want of nutriment to the organs themselves. In all cases of fasting, whether voluntary or compulsory, life is prolonged to a much greater extent if water be freely supplied. Without water the individual quickly dies, however much other nourishment he may get, but with abundance of water he may live for a considerable time, even if he take no solid nutriment at all. Here it is not that the water acts as a food; it supplies no new energy to the body, for unlike starch, or sugar, or fat, or proteids it has already undergone complete combustion. It cannot like them unite any further with oxygen and thus supply energy.

And yet it is more essential to life than any of them, for without it the products of waste cannot be removed from the tissues, and the vital fires, so to speak, are smothered in their own ash. If we take the excised muscle of a frog and stimulate it to repeated contraction, the contractions become feebler and feebler, until at last they cease altogether. But this is not because the fuel which the muscle contains in itself has been so completely burned up that none of it is left to furnish the requisite energy to the muscle, it is because the chemical processes necessary to the contraction of the muscle, are arrested by the accumulation of the products of its own waste. If we wash these out of the muscle by sending through its vessels a solution of common salt, which supplies to it no new material, but which removes these waste products, the contractile power of the muscle will be restored.

This restoration takes place still more quickly and thoroughly if we employ a fluid which will supply oxygen, such as a solution of permanganate of potash, instead of a simple solution of salt, which merely washes out the muscular waste. The muscle is like a fire in the grate, which goes out long before the coal is entirely consumed, on account of the ash which smothers it, and just as we can revive the smouldering embers by supplying them with oxygen by the use of bellows, so the muscle revives more quickly when its supply of oxygen is increased. The quicker the fire burns the sooner will it be choked in ash, and the more rapidly the muscle contracts the sooner will it lose its powers.

The same is the case with the heart. The slowly beating heart of a crocodile will pulsate for a day or more after it has been cut out of the body, but the rapidly pulsating heart of a mammal will very soon cease to beat; and the more rapidly it has been beating before the animal's death, the sooner will it cease to contract afterwards. If the vagi are cut in the living animal so that the cardiac pulsations become excessively rapid, the heart's movement ceases almost as soon as the animal dies; but if during life the vagi are irritated so as to make the heart contract very slowly indeed, it comes to resemble more nearly the heart of the crocodile, and continues to pulsate for a considerable time after the animal's death. The heart, too, resembles voluntary muscles, inasmuch as if we wash out of it the products of its own waste it will continue to beat for a much longer time than if we allow them to accumulate. By simply allowing a saline solution to circulate through the heart of a frog it may be kept beating for many hours longer than if it were left to itself. Both voluntary muscles and involuntary ones, such as the heart, cease to act, almost invariably, not from exhaustion of their energy-yielding substance, but from accumulation of the waste products within them; and muscles, both voluntary and involuntary, are much less sensitive to this process of choking than the delicate structures of the nerve centres. The gastrocnemius and the heart of a frog may retain their irritability for very many hours after their separation from the body, but the spinal cord of the same animal will rarely retain its irritability for a single hour after the circulation through it has been arrested. In warm-blooded animals the spinal cord is much more sensitive than in the frog, and if the circulation in the lower part of the spinal cord be arrested in a rabbit by the pressure of one's thumb upon the aorta for three or four minutes, the hind legs of the animal will become completely paralysed. Still more sensitive than the spinal cord is the brain, and if the circulation in the latter be arrested, consciousness is almost instantaneously abolished. In the animal body, as in the steam-engine, the governing and directing parts are much more sensitive and easily acted upon than the working parts. A single touch of the hand to the steam-valve will set the engine in action or stop its movement, although the power of a thousand men applied to the fly-wheel would avail little or nothing. And in animals the nerve centres are most sensitive and respond most readily to those circumstances which affect the organism. Not only are they exceedingly sensitive to the accumulation within them of the products of their own waste, but they are easily affected by alterations in the blood which circulates through them, and which conveys to them not only the products of muscular and glandular waste formed in other parts of the body, but also substances introduced from without, or absorbed from the intestinal canal. A single whiff of nitrite of amyl is sufficient to dilate the blood-vessels; a fraction of a grain of pilocarpine will stimulate the sweat-glands to the most profuse secretion; and half a drop of pure hydrocyanic acid is enough almost instantaneously to abolish consciousness and destroy the functional activity of the entire nervous system. In the case of the nitrite of amyl, the pilocarpine, or the hydrocyanic acid, we are able to distinguish the relation of cause and effect between the administration of the drug and the resulting changes in the organism. We do this, however, because of our knowledge, obtained by observation and experiment. Sometimes we cannot do this. I have seen, for example, a person become aware of a peculiar sensation which, to the patient, was quite unaccountable, but of which I understood the reason, as I knew it to be due to the fumes from a bottle of nitrite of amyl, which the patient could not see. We may notice a similar occurrence in poisoned animals. The poison of the cobra causes paralysis of the spinal cord and nerves, and induces intense weakness, so that the limbs of the animal fail under it. I have seen an animal in this condition attempt to walk and look round at its legs with a puzzled air, as though it could not understand what was the matter with it. It could not connect the weakness in its limbs with the introduction of the poison some time previously, although the connection between them was to me perfectly clear.

In the same way as the action of the cobra poison was a mystery to the animal, an epidemic of typhoid fever was formerly to us a mysterious occurrence for which no reason could be assigned, but we now trace it to the absorption into the bodies of the sufferers of typhoid poison introduced from without. We are now completely alive to the important results produced by the absorption from the intestinal canal of poisonous matters, such as typhoid germs, arsenic, or strychnine introduced into it from without. But perhaps we are not yet sufficiently alive to the important results produced by the absorption from the intestinal canal of substances generated in it by fermentation or imperfect digestion. We recognise the danger of breathing gas from a sewer, but probably we do not sufficiently realise that noxious gases may be produced in the intestine, and, being absorbed from it into the circulation, may produce symptoms of poisoning. And yet we know, from recorded observations, that such is the case, and that one at least of the chief components of sewer gas, viz. sulphuretted hydrogen, may be produced in the intestine. This gas, which is so readily recognised by its smell resembling rotten eggs, was found by Dumarquay[1] to be very quickly absorbed indeed from the intestine when injected into the rectum, and to be quickly excreted from the lungs, sometimes appearing to produce, during its elimination, some inflammation of the trachea and bronchi. This was especially the case when small quantities were injected, and it seems not improbable that the production of this gas in the intestine may have something to do with the bronchitis which is not unfrequently observed in connection with digestive disturbance (p. 40). In cases of indigestion this gas seems to be not unfrequently formed, because persons often complain of the taste of rotten eggs in the mouth or in the eructations. Even in such small quantities it is not improbable that it may exert a deleterious influence both upon the nervous system and upon the blood, for it is a powerful poison, in its action somewhat resembling hydrocyanic acid, though not so strong. It destroys ferments, and robs the blood corpuscles and the seeds and roots of plants of their power to decompose peroxide of hydrogen; and as this faculty seems to be closely associated with the processes of life, the sulphuretted hydrogen may be regarded as a powerful protoplasmic poison. Upon plants it has a curious action, differing very markedly from sulphurous acid. When a plant is exposed to sulphurous acid, the leaves shrivel up, wither, and fall off, but if the plant be now removed from the noxious influence of the gas, and placed under favourable conditions, it will recover, and send out fresh shoots. But if it be exposed to the action of sulphuretted hydrogen, the leaves, instead of shrivelling, simply begin to look flaccid, and droop. This seems, at first sight, to be a less deadly action than that of the sulphurous acid, but when the leaves have once begun to droop in this way the plant is dead, and does not recover when removed from the action of the gas. This gas is rarely generated in the intestine in such a quantity as to give rise to symptoms of acute poisoning, but it has sometimes this effect. A case is recorded by Senator[1] in which a strong and previously healthy man became affected with a slight gastro-intestinal catarrh in consequence of some error in his diet, and on the second day afterwards he had frequent eructations, smelling strongly of sulphuretted hydrogen. At the same time he suddenly became collapsed, pale, giddy, and with a rapid, small, compressible pulse. This lasted for 1½ to 2 minutes, and then passed off. The urine which he passed shortly afterwards contained sulphuretted hydrogen. On the same day he had a second attack of a similar sort, and then, the bowels having been opened, he recovered completely. Nor is sulphuretted hydrogen the only gas which may be formed in the stomach. Marsh gas is sometimes formed there too, and in an exceedingly interesting case recorded by Dr. Ewald,[2] the quantity was so great that it first attracted the patient's attention by taking fire as it issued from his mouth while he was lighting a cigar. In this curious case the formation of gas alternated with the production of a great quantity of acid fluid in the stomach, which led to vomiting, or, as the patient himself expressed it, sometimes his gas factory and sometimes his vinegar factory was at work. It is possible that this gas may be formed in small quantities in many more cases than has hitherto been suspected, but its absorption does not seem to have anything like the same deleterious action as that of sulphuretted hydrogen. Nor was the acetic acid which was found by chemical analysis to exist in the acid secretion of the stomach in this case likely to be productive of any injurious effects after its absorption. But butyric acid, which is sometimes formed in the stomach in other cases of indigestion, has been shown, by O. Weber, to be a powerful poison acting chiefly on the nerve centres.

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[1] *Comptes Rendus*, ix. p. 724.

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[1] *Berliner Klin. Wochenschrift*, 1868, No. 24.

[2] *Reichert's und Du Bois Reymond's Archiv*, 1874, p. 217.

It seems probable, however, that the substances, both gaseous and solid, formed in the stomach and absorbed from it, are upon the whole less poisonous in cases of indigestion than those which are produced lower down in the intestinal canal. We often find that patients are affected with severe gastric disorder without any affection of the nerve centres beyond the weakness produced by the inability to digest food, while in many persons the mere omission to evacuate the contents of the bowels at the usual time will lead to a headache in the course of the day. No doubt such a headache as this may be due, to some extent, to the nervous irritation caused by the presence of the fæces in the intestine, but it seems quite possible that it is also due to the absorption of some of the fæcal matter itself. Nor do we at present know what effects are produced by the absorption of the various digestive juices themselves. That such absorption takes place there can be little doubt. It has been demonstrated in the case of the bile, which is absorbed with great rapidity from the intestine and re-excreted by the liver, so that it does not pass into the general circulation at all. But what becomes of the other digestive fluids, and the ferments they contain? The pepsine finds its way in minute quantities through the liver, and has been discovered in various tissues of the body and in the urine. This, however, matters but little, for it cannot act upon the tissues themselves, inasmuch as they possess an alkaline reaction. But the case must be somewhat different with pancreatine, and if pancreatic fluid be absorbed from the intestine and pass through the liver unchanged, we should expect that it would have a very powerful action upon the tissues throughout the body, because there appears to be no reason why it should not act upon them just as it does upon the food in the intestine itself. It seems not at all unlikely, then, that the liver has got another function besides those usually assigned to it, viz. that of preventing the digestive ferments from reaching the general circulation so as to act upon the tissues. Now we do find in the liver itself and in the bile a ferment having the same diastatic power as the pancreatic juice, but it does not appear in such quantities as one would expect if the whole of the pancreatic ferment were simply re-excreted by the liver along with the bile, and as we have no evidence that the ferment is destroyed during its action in the intestine, we are naturally led to think that it may undergo a chang the converse of that which it undergoes in the pa during the process of secretion. In the pancreas its ready-formed ferment, but we have a ferment-form which has recently become known under the nam ymogen, given to it by Heidenhain, but the writer heard it described by Kühne in his lectures on physiological chemistry delivered at Amsterdam in 1869. I quote verbatim from the notes which I took at the time of his lecture on the pancreas. "Glands which have no action on fibrine can be made active by digesting in very dilute acid and then neutralising or alkalising; there seeming to exist a ferment-forming substance in the pancreas." During digestion this ferment-forming substance or zymogen splits up and yields free ferment, and it seems not improbable that it is in the liver that this very ferment, after its digestive work is done, becomes again converted into the ferment-forming substance which may circulate throughout the tissues without doing them any injury.

Whether this be the case or not, however, with regard to the ferments of the gastric, pancreatic, and intestinal juices, all of which must pass through the liver before they reach the general circulation, there can be no doubt that the products of intestinal digestion do undergo very marked changes indeed in the liver, as is shown by the formation from them of very large quantities of a new substance, glycogen—a substance which is not contained in the products of the gastric and intestinal digestion which reach the liver, and yet which is of the highest importance for the nutriment of the body. Under ordinary circumstances, nearly the whole of the sugar formed in the intestine and absorbed from it, is arrested in the liver, so that very little passes into the general circulation and appears in the urine, although even in healthy persons traces of sugar are excreted by the kidneys. Under exceptional circumstances, however, sugar may pass through in considerable quantities, as, for example, when the individual takes, on an empty stomach, a large quantity of syrup. However healthy his organs may be, sugar will then appear in the urine. The same is the case in regard to albumen. Usually, the whole albuminous constituents of our food are so transformed in the stomach, intestines, and liver, that no albuminous substances of the kind which can pass through the kidneys get into the general circulation. But if one takes such a quantity of eggs as to completely overtask the digestive powers, the egg albumin will pass unchanged into the blood, and be excreted by the kidneys.[1]

Other albuminous substances, the products of intestinal digestion, and peptones also, occasionally make their appearance in the urine, as well as egg albumin. Even when the processes of assimilation are not so seriously interfered with as in these instances, we observe that products of nitrogenous waste frequently occur in the form of lithates in the urine. An excess of these indicates some pathological condition, even although it may be very trivial. We cannot, indeed, say what the exact condition is, because we find lithates appearing in the urine after violent muscular exertion accompanied by profuse sweating, so that they may possibly represent some of the products of muscular waste; but we also find that they occur in large quantities in the urine after slight indiscretions in diet, although no muscular exertion has been undergone, and in these cases we can hardly do otherwise than regard them as products of the imperfect assimilation of nitrogenous matters which ought to have been eliminated, not in the form of urates, but of urea. Now physiological experiments and observations indicate that the liver is the chief, if not the only, part of the body in which urea is formed. This at least appears to be the case excepting in febrile conditions, in which, possibly, the urea may also be formed, to a considerable extent, in the muscles. The old notion, then, which connected the appearance of lithates in the urine with disordered function of the liver, is probably in a great measure correct. There is little or no reason to believe that these lithates are formed in the kidneys. They are, probably, simply separated by them from the blood, and their presence in the urine would therefore indicate their presence in the blood and tissues. Now lithates in themselves do not appear to have any particularly injurious effects, either upon the nervous tissues or the muscles, but as their presence indicates deficient assimilation, they may be accompanied by other substances which have a much more pernicious action, just as there are many bad smells which, *per se*, though very disagreeable, have no marked poisonous action, while other very poisonous substances have comparatively little odour. Yet the disagreeable odours which accompany sewer gas, although perhaps not always dependent upon its poisonous constituents, warn us of the presence of gases which may be intensely poisonous. Nevertheless, just as the poisonous gases may be present without any disagreeable smell, so we may have substances circulating in the blood which have the most injurious effect upon the nerve centres, without the presence of urates in the urine.

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[1] Brunton and Power, *Bartholomew's Hospital Reports*, 1877, p. 283.

The importance of the functions of the liver in reference to assimilation is now generally recognised, although for a long time this, the largest gland in the body, was considered to have no other office than simply to secrete bile. Although the bile is useful in digestion it is not of primary importance in this process; but its proper secretion is probably associated very closely with the assimilative functions of the liver, and if the biliary secretion does not take place properly we can hardly expect the assimilation to be perfect.

The greatest care appears to have been taken in the construction of the liver to prevent the bile from coming in contact with the blood, the ultimate radicals of the bile ducts, or biliary capillaries, being placed as far from the blood capillaries as the structure of the liver will allow. Notwithstanding this care, the distance between the blood and the bile capillaries is small, though it is sufficient, under ordinary circumstances, to prevent the absorption of bile into the blood. But whenever an obstruction takes place to the exit of bile, and the pressure of bile in the biliary capillaries increases, an absorption of this secretion occurs. Bile is secreted under very low pressure, and a very slight increase in this is sufficient to cause re-absorption. Such an increase as would not materially affect the secretion of other glands, such as the salivary gland, is sufficient to prevent the exit of bile through the biliary ducts, and cause its re-absorption into the blood. The excretion of bile is greatly aided by the pressure which is exerted upon it by the movements of the diaphragm during respiration, and, indeed, so low is the pressure under which the bile is secreted that, but for the assistance given by the respiratory movement, it would just barely find its way into the duodenum. Although we are accustomed to say "As bitter as gall," according to my own observations fresh human bile is not bitter. When it is thrown up in consequence of indigestion it is intensely bitter. On one occasion, when making experiments with digitalis, I had taken in the course of two days one grain of pure digitalin, and brought on symptoms of poisoning, with intense vomiting. During this I brought up a quantity of bile of a golden-yellow colour, and without the least trace of bitterness. This circumstance struck me as being so peculiar that in my published results I hesitated to call it bile, although I did not see what else it could be.[1] But when it remains long in the gall-bladder it undergoes changes, and in some cases of vomiting that I have seen the vomited matters have been of a bright grass-green colour. When examined, also, after death, the bile in the gall-bladder is not unfrequently found of a dark colour, and the same is probably the case when it is retained in the gall-bladder for any length of time during life. How the Greeks arrived at the notion of giving the name "Melancholy," *i. e.* black bile, to depression of spirits, we do not quite know, but certain it is that depression of spirits is very often associated with indigestion, and, moreover, that the form of indigestion with which we find depression of spirits associated, is not so much gastric as intestinal, or, more probably, hepatic. According to Herbert Spencer, we require rapid evolution of nervous energy in order to have exhilaration of the spirits, and depression of nervous energy is associated with melancholy. Now the effect of bile acids circulating in the blood, as shown by physiological experiments, is to depress the reflex function of the spinal cord, to lessen the functions of the brain, producing drowsiness ending in coma, and to weaken the circulation by paralysing the cardiac ganglia.[2] Such a combination of actions is just the one required by Mr. Spencer's hypothesis to produce melancholia, and here we find ancient notions joining hands with modern science.

But bile is not the only substance which produces a depressing effect upon the circulation when absorbed into it from the portal system. I have already mentioned that certain albuminous products of intestinal digestion and peptones occasionally make their appearance in the urine. Amongst the former is an albuminous substance, not precipitated by boiling, but by nitric acid in the cold. This substance I have observed in the urine of a healthy man after he had drunk a large quantity of strong beef-tea at a draught upon an empty stomach. My attention was drawn to the urine by the froth remaining upon it for a somewhat unusual time. On examination, this substance was discovered in it. On examining the beef-tea which the person had taken a similar albuminous substance was found in it, so that there can be little doubt that in this case the albumen was simply absorbed so rapidly from the stomach or intestines that it passed without change through the portal system into the general circulation, and thus reached the kidneys, where it was excreted in much the same way as sugar would have been under similar circumstances. We find only too frequently that both doctors and patients think that the strength is sure to be kept up if a sufficient quantity of beef-tea can only be got down; but this observation, I think, raises the question whether beef-tea may not very frequently be actually injurious, and whether the products of muscular waste which constitute the chief portion of beef-tea or beef-essence may not under certain circumstances be actually poisonous. For although there can be no doubt that beef-tea is in many cases a most useful stimulant, one which we find it very hard indeed to do without, and which could hardly be replaced by any other, yet sometimes the administration of beef-tea, like that of alcoholic stimulants, may be overdone, and the patient weakened instead of strengthened. In many cases of nervous depression we find a feeling of weakness and prostration coming on during digestion, and becoming so very marked about the second hour after a meal has been taken, and at the very time when absorption is going on, that we can hardly do otherwise than ascribe it to actual poisoning by digestive products absorbed into the circulation. From the observation of a number of cases I came to the conclusion that the languor and faintness of which many patients complained, and which occurred about eleven and four o'clock, was due to actual poisoning by the products of digestion of breakfast and lunch; but at the time when I arrived at this conclusion I had no experimental data to, show that the products of digestion were actually poisonous in themselves, and only within the last few months have I seen the conclusions to which I had arrived by clinical observation confirmed by experiments made in the laboratory. Such experiments have been made by Professor Albertoni of Genoa, and by Dr. Schmidt-Mühlheim in Professor Ludwig's laboratory at Leipsic.

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[1] Brunton *On Digitalis*, p. 67.

[2] *Vide* Wickham Legge, *Bile, Jaundice, and Bilious Diseases*, pp. 207, 216, 217.

Professor Albertoni has found that peptones have a most remarkable action upon the blood, completely destroying its coagulability in dogs, while they have little power in this respect over the blood of rabbits or sheep. The number of species upon which he experimented is limited, so that he cannot as yet draw the conclusion with certainty that peptones prevent the coagulation of the blood in carnivora and not in herbivora, although, so far as experiments go, this conclusion seems probable. He and Dr. Schmidt-Mühlheim independently made the discovery that peptones prevented the coagulation of the blood in dogs, and the latter, under Ludwig's direction, has also investigated their action upon the circulation. He finds that, when injected into a vein, they greatly depress the circulation, so that the blood-pressure falls very considerably; and when the quantity injected is large, they produce a soporose condition, complete arrest of the secretion by the kidneys, convulsions, and death. From these experiments it is evident that the normal products of digestion are poisons of no inconsiderable power, and that if they reach the general circulation in large quantities they may produce very alarming, if not dangerous, symptoms.

Such experiments as this open up a new and very wide field of inquiry, which is likely to prove of very great importance. We have hitherto been accustomed to reckon all peptones as identical, by whatever digestive ferment they were formed, and to look upon it as a matter of slight moment whether albuminous foods introduced into the digestive canal were dissolved by the stomach or by the pancreas, although it is quite possible that the peptones differ as much from each other as different kinds of sugars. It is a matter of wonder, also, that at the present moment, although the digestive processes have been so carefully investigated, we know very little of the uses of the *succus entericus.* Notwithstanding the great extent and evident importance of the intestine, and the large quantity of fluid which it is able to secrete: all that we find regarding the action of this secretion in such a book as Foster's *Physiology* is that "the statements with reference to its action are conflicting. Probably it has no direct action on either fats or proteids, but is amylolitic in some animals, though not in all. *Succus entericus* has also been said to change cane- into grape-sugar, and by a fermentative action to convert cane-sugar into lactic acid, and this again into butyric acid, with an evolution of carbonic acid and free hydrogen." The reason why experiments on the action of intestinal juice have given such an apparently unsatisfactory result is that they have been chiefly tried on such kinds of food as we are accustomed to put into our mouths. Now the intestinal juice is not intended to act upon such substances: its place is to finish the digestion begun by the other juices; and when experiments with intestinal juice are tried upon foods which have previously been subjected to the action of the other digestive fluids, positive, and not negative, results are obtained. Thus, for example, it was stated by Kühne, in his lectures at Amsterdam in 1868-9, that though intestinal juice would dissolve raw albumen and fibrine, it would not act at all upon them if boiled; but if the boiled albumen or fibrine were first subjected to the action of pancreatic juice for a short time, the intestinal juice would afterwards dissolve them much more quickly than it would even in a raw condition. The action of digestive ferments is just beginning to find a practical application in medicine, and sometimes, undoubtedly, they are of very great service; but unless their action is investigated more thoroughly than it has been up to the present, it is just possible that we may by-and-by find that the digestive ferments, like all other powerful agents, may do much harm as well as much good. Hitherto we have been accustomed to regard the phases of digestion, gastric digestion, pancreatic digestion, and intestinal digestion, as almost separate processes, any of which we might increase indefinitely without doing any harm to the patient. We forget the relation which each bears to the other; and yet such a relation undoubtedly exists, for we find that when pepsine is mixed with bile it is precipitated and rendered inert. Further transformation of foods by the gastric juice is thus arrested as soon as the chyme leaves the stomach. And well it is that this should be so, for if the pepsine was not rendered inert it would destroy that pancreatic ferment (trypsin) which acts on albuminous substances, and thus interfere with digestion by it. How far this prolonged peptic digestion and impaired pancreatic digestion of albuminous substances has to do with the production of poisonous digestive products in cases where the quantity of bile poured into the intestine is deficient it is at present impossible to say, but it is a condition which ought to be kept in mind in all cases where there is deficiency of bile in the intestine, and the advisability of nourishing the patient by farinaceous food is constantly to be considered in these cases.

And now comes the question, How is it that in healthy conditions of the intestine peptones do not pass into the general circulation, and are therefore unable to exert any poisonous action upon the nerve-centres? This question is one which we cannot at present answer quite satisfactorily.

Usually the peptones disappear from the portal blood before it reaches the general circulation. Indeed, Ludwig and Schmidt-Mühlheim found that even in the portal blood, before it reaches the liver, very little if any peptone is to be found. They have not succeeded in discovering where the peptone undergoes change. Plosz and Gergyai, and also Drosdorff, have discovered peptone in the blood of the portal vein, and Plosz and Gergyai have been led, by their experiments, to regard the liver as the seat of the transformation of peptones. In consideration of the more recent experiments of Ludwig and Schmidt-Mühlheim, we cannot entirely adopt the view of these authors, though it is nevertheless possible that they are to a certain extent right, and that the liver, to some extent at least, serves the purpose of preventing any peptones from getting into the general circulation, which may have escaped transformation in the portal blood before reaching it.[1]

And now, having run over in this cursory manner some points connected with digestion and with the functions of the liver, we come back to the question of why it is that the mental worker becomes depressed, irritable, melancholy, and, it may be, stupid and forgetful, after a few months' work, although every part of his body may be organically healthy, and a month's holiday may be sufficient to restore every organ to perfect functional activity? One reason, no doubt, may be that his systematic overwork may produce a diminution in the energy-yielding substance of his nerve-centres, just as we see that a certain amount of atrophy occasionally occurs in overworked muscles. But this does not seem very probable. It seems much more likely that they cease to act in the normal way because during each day's activity a certain amount of waste product is formed which is not perfectly removed during the hours of rest.

All throughout the body we have most elaborate arrangements for removing waste products. In the muscles, for example, we find that the fascia which surrounds them forms a regular pumping arrangement, the two layers of which it consists being separated from each other at each muscular relaxation, and pressed together at each contraction.[2] The lymph and the waste products which it contains are thereby actually pumped out of the muscle at each contraction, and sent onwards into the larger lymph-channels, so that the muscular action itself removes the waste products (p. 332). At the same time we find that the movement of the muscles of the leg, for example, will also pump out the blood from the veins, sending it upwards from the feet, and pressing it upwards to the body.[1]

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[1] Schmidt-Mühlheim, *Archiv für Anatomie und Physiologie ; Physiologische Abth*, 1 & 2 *Heft*, 1880, p. 33. Albertoni, *Centralblatt f. d. medicinischen Wissenschaften*, 1880, p. 577.

[2] Ludwig and Genersich, p. 53, *Ludwig's Arbeiten*, 1870.

Again, we find that in the abdomen and thorax we have pumping arrangements, whereby any excess of the serous fluid which bathes the intestines and lungs is pumped out of the peritoneal pleural cavities by the action of respiration. The two layers of the central tendon of the diaphragm and of the pleura here form pumping arrangements similar to the fascia in the leg.

The brain and spinal cord, being inclosed in rigid cases, have no pumping arrangements in immediate connection with them, but the circulation of the cerebral spinal fluid in them is probably effected also by the movements of the thorax and abdomen. The cavity of the arachnoid and of the cerebral ventricles is not only continuous with similar cavities in the spinal cord, but also with the lymph-space surrounding the choroid with the interior chamber of the eye, and even with the lumbar lymphatics; and Professor Schwalbe has succeeded in injecting these parts by a single insertion of the nozzle of his injecting syringe into the arachnoid. His observations have been confirmed and extended by Althann.[2] The experiments of Quincke have shown that during life a current exists in the cerebral spinal fluid both from above downwards, and from below upwards.[3] The cause of this current is, in all probability, the respiratory movements. We have, indeed, in the brain and spinal cord, a condition not unlike that which exists in the fasciæ covering muscles, where the muscular substance during its contraction presses the flexible inner against the unyielding outer layer of the fascia, and thus produces, in the space between them, a pumping action. The skull and vertebral canal would correspond to the hard layer of fascia; and the brain and cord, which, as we know, expand and retract during the movements of respiration, when a part of their bony case is removed, will have a similar pumping action upon the cerebral spinal fluid to that of the muscle upon the lymph in the fascia.

In the case of the brain and the cord there will be, in addition, a pumping action produced by the very circulation of the blood in them, the alternate expansion and dilatation, corresponding to the heart's beats, having a similar effect to that produced by the respiratory movements. As stimulation of the brain causes dilatation of its vessels, and increases the flow of blood through them, mental action of itself not only attracts more blood to the brain, but provides to some extent for the removal of waste products. The movements induced by the cardiac pulsations are not so extensive as those caused by the respiratory movements or by muscular exertion, and therefore, when the brain is overworked, and the respiration and muscular movements are underworked, the cerebral nutrition will be diminished by the imperfect removal of waste from its substance. But if, in addition to this, the cerebral cells and fibres are actually poisoned by the circulation within the vessels which supply them, of noxious substances due to imperfect digestion or assimilation, matters will become very much worse.

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[1] Braune, *Ber. der Sächs. Gesell. d. Wiss.*, 1870, p. 261.

[2] Althann, *vide Virchow's Jahresbericht*, 1872, p. 156.

[3] Several authors, as Axel Key and Retzius (*Nordisk medicinsk Arkiv.*, 1870, II, 1, 13—18; *Centralblatt für Medicinische Wissenschaften*, 1871, p. 514); Quincke (*Reichert's und Du Bois Reymond's Archiv*, 1872, 153—177; *Centralblatt für Med. Wissen.*, 1872, p. 898.)

We have already seen how much the liver has to do with such a condition. Now, while the brain is being taxed to its utmost, the worker generally gets but very little exercise. The consequence of this is, that although the respiratory movements still go on with regularity, and the pressure of the diaphragm upon the liver at each respiration presses the bile more or less out of the liver, yet the pressure thus exerted is very much less than would be the case if the individual were making occasional vigorous efforts during which the breath was held, and the muscles of the abdomen put into action, as, for instance, in springing from boulder to boulder on the moraine of a Swiss glacier. So long as the brain-worker is exceedingly careful what he eats, so that no excess of bile is formed, and is fortunate enough to escape duodenal catarrh, so that no impediment, however slight, prevents the flow of bile into the intestine, he may get along perfectly well; but if he be unfortunate enough to get what is commonly known as cold in the stomach, or unwary enough to irritate the mucous membrane of his stomach or duodenum by wines or spirits, the case is at once altered, for now the swollen mucous membrane of the duodenum tends to close the orifice of the bile-duct, or the congestion may even extend up to the duct itself. Thus an impediment, however slight it may be, is opposed to the exit of bile from the liver. The pressure under which the bile is secreted, as I have already said, is very small, and there being no extra pressure put upon the liver by the diaphragm and abdominal muscles, instead of the bile being at once forced out of the bile-capillaries it will remain in them, causing more or less congestion, and now follows a whole series of disagreeable results. The bile, which may be looked upon as a waste product of the liver, not being removed, the other functions of the liver are disturbed. Assimilation becomes imperfect, we find lithates appearing in the urine; the circulation in the liver itself may be altered, and thereby the whole circulation in the stomach and intestines may be impeded, for it must be remembered that all the blood from the stomach and intestines has to pass through the liver before it again reaches the general circulation. Thus the individual becomes troubled with hæmorrhoids, secretion and vermicular movement in the bowels are impaired, so that constipation results; congestion of the stomach, with loss of appetite, impaired digestion, and flatulent eructations ensue, and the brain and nervous system begin to suffer from the accumulation in them of their own waste or the absorption of abnormal products of assimilation.

Feeling weak, dull, and melancholy, the sufferer now thinks he ought to take meat three times a day, and perhaps during the intervals of his meals, to take strong beef-tea, or perhaps a glass of wine or a nip of brandy. Yet, in spite of all this, he becomes weaker, more stupid, and more melancholy; and no wonder. He is simply further over-taxing his already over-worked digestive organs. He is piling up fuel, instead of removing ash, and choking the vital processes both in his digestive and nervous systems. What he wants is not more nutriment, but a more rapid removal of waste, and the change upon the adoption of a proper system of treatment is in many cases most marked and satisfactory both to the physician and the patient.

The first thing to be done is to clear out the liver. This may seem to be an unscientific expression, one adapted rather to popular notions than in accordance with ascertained facts. But this is not the case. In a former paper on the action of purgative medicines,[1] I have explained the way in which certain purgatives may be said to have the effect of clearing out the liver, and first amongst those we must reckon mercurials. In the case which we have just been describing, five grains of blue pill may be taken at night, or two or three grains of calomel either alone or combined with extract of hyoscyamus or conium, and this should be followed next morning by a saline draught. As a saline we may use sulphate of magnesia, or Friedrichshall, Pullna, Hunyadi Janos, or Carlsbad water; but whichever saline we may choose, the use of one or other of them should on no account be omitted. One of the best salines is half a drachm of crystallised Carlsbad salts dissolved in a tumbler of hot water and drunk immediately after rising in the morning, and this may be used not merely in the morning after the mercurial, but it may also be employed every morning in cases where the bowels are constipated, The quantity of water is of considerable importance. Half a teaspoonful dissolved in a full tumbler is more efficacious than double the quantity of salt in half the quantity of water. Nor is this to be wondered at, for not only has the larger quantity of liquid greater power to wash out the intestine, but the increased amount of the water tends to increase the quantity of bile secreted, and this increase in bile is especially marked when the water is taken frequently in small quantities, as it is by persons undergoing the cure at Carlsbad, or who take the solution of Carlsbad salts at home by sipping it at intervals while dressing, instead of drinking it all off at once.

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[1] *Practitioner*, vol. xii. pp. 342, 403.

Zawilski found that when liquids were taken in this way not only was the bile secreted in greater quantity, but under a greater pressure, so much so that secretion still occurred when such an obstruction was opposed to its exit as would usually have caused the bile which had already been secreted to be reabsorbed.[1]

When the Carlsbad salts are employed after the mercurial, it is, I think, best to take them in single large draughts immediately on rising, but when used by themselves the solution should be sipped at intervals during dressing. When used alone the Carlsbad water, warmed in an ætna, or by standing the tumbler in a basin of hot water, is perhaps even better than the salts, which represent only a part of the normal constituents of the water. After the liver has been thoroughly cleared out in this manner by a mercurial purgative followed by a saline, vegetable cholagogues, such as iridin and euonymin, may be employed to assist the action of the Carlsbad salts, when these are found to be insufficient even although they are taken with regularity. These cholagogues, the introduction of which into medicine, in this country at least, we owe to Professor Rutherford, are sometimes as useful, perhaps even more so than mercury, but as a rule I think the mercurial purgative is the best to begin with. Euonymin is the cholagogue most usually employed, but iridin is really the most powerful one, and is specially recommended by Dr. Rutherford.

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[1] *Sitzungsber. der Wiener Acad.*, 1877; *Mat. Nat.*, Abth. Bd. iv. p. 73.

Instead of trying to keep up the strength, as it is termed, by loading the stomach with food, the exhausted brain-worker should rather lean towards abstinence from food, and especially towards abstinence from alcoholic liquors. The feeling of muscular weakness and lassitude, which I have already had occasion to mention as frequently coming on about two hours after meals, is not uncommonly met with in persons belonging to the upper classes who are well fed and have little exercise. It is perhaps seen in its most marked form in young women or girls who have left school, and who, having no definite occupation in life, are indisposed to any exercise, either bodily or mental. I am led to look upon this condition as one of poisoning, both on account of the time of its occurrence, during the absorption of digestive products, and by reason of the peculiar symptoms—viz. a curious weight in the legs and arms, the patient describing them as feeling like lumps of lead. These symptoms so much resemble the effect which would be produced by a poison like curare, that one could hardly help attributing them to the action of a depressant or paralyser of motor nerves or centres. The recent researches of Ludwig and Schmidt-Mühlheim render it exceedingly probable that peptones are the poisonous agents in these cases, and an observation which I have made seems to confirm this conclusion, for I find that the weakness and languor are apparently less after meals consisting of farinaceous food only. My observations, however, are not sufficiently extensive to convince me absolutely that they are entirely absent after meals of this sort, so that possibly the poisoning by peptones, although one cause of the languor, is not to be looked upon as the only cause. A glass of soda-water with or without the juice of a lemon squeezed into it, may be slowly sipped when the feeling of weakness comes on, and a biscuit may be eaten along with it if desired. This will sometimes relieve languor, but if it be found insufficient, a small cup of warm but weak tea or cocoa with a biscuit will act as an efficient stimulant, although they may be less unobjectionable than the soda-water. Heat is one of the most powerful of all cardiac stimulants, and any warm fluid in the stomach will increase its action; a cup of warm water alone will do this, but it is unpleasant to take, and so something must be added to flavour it: a little claret may be used if tea disagrees, or tincture of ginger and sugar, or even some Liebig's extract. It is the local action of the warmth that we want, and in order to obtain it we may sometimes have to put up with the inconvenience of giving substances which will be to some extent injurious after their absorption, such as beef extract or even whisky. The advice that I have given here, in recommending a glass of cold soda-water or a cup of hot tea, may remind one of the countryman in one of Æsop's Fables who fell into disgrace because he blew upon the fire to heat it, and blew upon his porridge to cool it. And yet the countryman was right, for experience had taught him that the desired result would follow his actions, even though he might not be able to explain the reason why. So we find that a draught of cold water will revive a fainting person, and hot water will have a somewhat similar effect. Both of them give relief by stimulating the circulation, but their *modus operandi* is different. In the case of the hot water the circulation is stimulated through the heart, which is excited to increased contraction, and thus the tension within the vessels is raised. In the case of the cold, the pressure is also raised, not by stimulation of the heart, but by the contraction of the vessels, especially those of the stomach and intestine. In the case of warmth, more blood is poured into the aorta by the excited heart, and where we apply cold less blood flows out of the aorta into the veins through the intestinal vessels, and thus it is that in both cases the tension is raised and the faintness removed.

At each meal it is well for the patient to begin with the solids before he proceeds to the fluids, and at breakfast, instead of beginning the meal with a cup of tea or coffee, he should finish a slice of dry toast and a piece of fish, egg, or bacon before he takes any liquid at all. The same rule should be observed at lunch and dinner. The effect of this course is that the patient is less troubled with weight and flatulence after meals. The explanation of the fact probably is that the solids, entering the stomach first, stimulate it to secretion and movement; whereas if it already contained a quantity of liquid at the time they were ingested they would not have this effect, and imperfect digestion would be the result. At dinner, wine or beer may be taken if the patient finds them agree, but in all probability he will be better without them. There are some brain-workers who require them, and must have them, but it is better for a good many others to avoid either wine or beer, and to take some effervescing water instead. Not unfrequently we hear the complaint that effervescing water is too cold, and where this is felt to be the case ginger ale or zoedone may be substituted, the colour of these beverages and their more pungent taste rendering them more grateful both to the eye and the palate of many persons. In some cases weak claret and water may be used, and if the water be somewhat warm the mixture will be better for the patients, and will not cause the feeling of coldness in the stomach, of which they sometimes complain.

A medicine which has long enjoyed a great reputation in disorder of the liver is nitro-muriatic acid, and I think this reputation well deserved. We do not know how it acts, but in some way or another it does tend to improve the digestion. Ten minims of the dilute nitro-hydrochloric acid either before or immediately after meals, combined with some aromatic and carminative, such as chloroform and cardamoms or orange, and from five to ten minims of tincture of nux vomica where the nervous depression is great, is a most efficient remedy.

But even with all this care in food and drink, with all this attention to what is to be taken and what avoided, with medicine morning, noon, and night, how are we to keep the liver in order without exercise? Sometimes the patient may be able to take walking exercise, but when he does it is generally only for a short time during the day, and of so gentle a character that the respiratory movements are but very slightly increased, and the liver is hardly more stimulated by the pressure of the diaphragm and abdominal walls during the walk than it would have been had the patient remained quietly at home. Time is an important element in many cases. Many a hard-worked man has his day so fully occupied that he cannot give up more than a quarter or half of an hour to exercise, and it is of importance that in this limited period he should get as much exercise as possible, and the best way to employ this brief time is by taking horse exercise. I believe it is to the late Lord Palmerston that we owe the saying, that "the outside of a horse is the best thing for the inside of a man," and it is very near the truth. A brisk trot for fifteen minutes will cause more pressure upon and stimulation of the liver than a lazy lounge of an hour or more. The time for this will depend in a great measure upon the engagements of the patient. It should not be taken immediately after a meal, and for most men whose days are fully occupied almost the only time to take it is before breakfast. A cup of milk, or a small cup of tea or coffee, with a piece of bread and butter or a biscuit, may be taken just before starting, and then the regular breakfast will be taken with greater appetite and better digestion after the exercise is over.

By careful attention to the removal of waste products, and to the prevention of absorption of poisonous substances from the intestine, by regulation of the diet, regulation of the bowels, and exercise, in the ways just mentioned, I believe that the nervous exhaustion and depression from which brain-workers suffer may be greatly diminished, even though it may not be entirely prevented.

ATROPIA AS AN ANTIDOTE TO POISONOUS MUSHROOMS.

(*From the 'British Medical Journal,' November 14th,* 1874.)

It is, perhaps, not very generally known that one of the most perfect instances of antagonism with which we are acquainted is the power of atropia to counteract the poisonous principle of mushrooms. This principle seems to be the same, or nearly the same, in different species of mushroom, for they all seem to have similar actions. The *Agaricus muscarius, A. phalloides, A. pantherinus, Boletus Satanas,* and *Russula fœtens,* all resemble one another in action; but the effects produced by the same sort of fungus may vary in different individuals. They all act more or less on the intestinal canal and heart, and apparently also on the brain. The usual symptoms are uneasiness in the stomach, vomiting, purging, a feeling of constriction in the neck, want of breath, giddiness, fainting, prostration, and stupor. Sometimes the intestinal symptoms are most prominent; at other times, the cerebral ones. The most extraordinary action of poisonous mushrooms is upon the heart. The active principle of the *Agaricus muscarius,* or *Amanita muscaria,* was separated by my friend Professor Schmiedeberg of Strasburg, and named by him muscarin. The merest trace of this alkaloid will arrest the pulsations of the frog's heart almost instantaneously, and prevent it from ever beating again unless its effect be counteracted. But if a minute quantity of atropia be brought into contact with the organ, it will begin to pulsate again, and will go on beating for a long time. I have stopped the motions of a frog's heart by dropping a little dilute muscarin upon it, and have again made it pulsate after it had remained perfectly motionless for no less than four hours. Muscarin does not stop the heart of mammals so readily as that of the frog, but it renders the pulse slower, and intermissions are sometimes noticed in cases of poisoning by mushrooms. A little atropia at once counteracts the effect of muscarin on the heart in mammals just as it does in the frog.

But, besides this remarkable effect of muscarin on the heart discovered by Professor Schmiedeberg, it possesses one no less extraordinary upon the pulmonary vessels. This I discovered some time ago, when experimenting with a specimen of muscarin given to me by my friend. He had noticed that intense dyspnœa was one of the most marked symptoms produced by the poison. He had not, however, attempted to explain it. He had observed that during the dyspnœa the arteries contained very little blood, and when cut across hardly bled at all. On considering the matter, it appeared to me that this emptiness of the arteries and the dyspnœa might be due to a common cause, viz., contraction of the pulmonary vessels. If these vessels contract spasmodically, the blood will be prevented from passing through them, and will accumulate in the right side of the heart. The right heart and veins will consequently become gorged with blood, while none will reach the left side, so that both it and the arteries will remain empty or nearly so (see fig. 29). As the blood cannot reach the lungs to become aërated, dyspnœa occurs; for this may be produced as well by preventing the blood from reaching the air as by compressing the windpipe, and thus preventing the air from reaching the blood. This supposition of mine appeared to explain the symptoms perfectly; but it was only a supposition, and required to be tested by experiment before it could be regarded as having any value. I accordingly tested it in the following way.

Having thoroughly narcotised a rabbit with hydrate of chloral, I commenced artificial respiration, and opened the thorax, so that I could see the lungs and the heart perfectly. It is well known that with due precautions animals can be kept in this condition, for an hour or two at least, without any change occurring in either heart or lungs. The animal is so deeply narcotised that it lies as if dead, but the heart goes on pulsating as regularly as if everything were in its normal condition. Both sides of the heart are equally filled, the vena cava is only moderately distended, and the lungs are rosy. While this state of things continued, I injected a little muscarin into the jugular vein. At once everything changed. The lungs became blanched, the left side of the heart became small, the right side swelled up, and the vena cava became greatly distended. (See fig. 29.) After a short time, I injected a little atropia into the jugular vein, and instantly everything returned to its normal condition. The left side of the heart regained its former size, the right side diminished, the distension of the veins disappeared, and the blanched lungs again assumed a rosy hue (see fig. 28). This was exactly what I expected, and consequently I was all the more distrustful of my own personal observations. A little prejudice might have led me to exaggerate the blanching of the lungs, although the condition of the heart and veins was so obvious as to preclude the possibility of error. I accordingly got two observers who knew nothing about the experiment, and repeated it before them, noting down *their* observations. These agreed exactly with my own, and I thus became sure of my facts.

As dyspnœa is observed after poisoning by mushrooms, both in animals and men, we may, I think, safely extend the results we have obtained by experiments on the lower animals to men, and say that in them also the dyspnœa is due to spasmodic contraction of the pulmonary vessels. The dyspnœa, as well as the other symptoms of muscarin poisoning, disappear in animals almost immediately after the injection of atropia, and, indeed, Schmiedeberg and Koppe describe an experiment in which the use of this antidote during the death-struggle completely restored a dog which had been poisoned by muscarin. They, therefore, recommend that in cases of poisoning by mushrooms, the stomach should be emptied and then atropia injected subcutaneously. It is a curious circumstance that, in poisoning by mushrooms, tickling the fauces seems to prove much more efficacious in producing vomiting than the administration of tartar emetic. The antidote may be given by the mouth, either in the form of tincture of belladonna or liquor atropiæ; but Schmiedeberg and Koppe prefer subcutaneous injection on account of the more rapid absorption and speedy action of the drug, as well as the more accurate adjustment of the dose. The dose for subcutaneous injection should be about one-hundredth of a grain or about one minim of the liquor atropiæ sulphatis (*B. P.*) repeated if necessary until the dyspnœa is relieved.

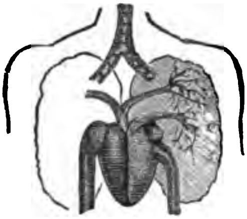

Fig. 28.—Diagram of the normal pulmonary circulation.

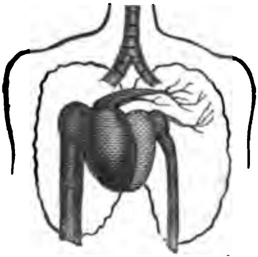

Fig. 29.—Diagram of the pulmonary circulation in poisoning by muscarin.

PHYSIOLOGICAL RESEARCHES ON THE NATURE OF CHOLERA.

(*Read before the British Association at Bradford, Sept. 23rd*, 1873.)

Printed in abstract in *Reports of the British Association* for 1873.

THE medicines which have been employed at one time or another in the treatment of cholera are almost numberless, and yet the universal dread in which this terrible disease is held, no less than the distinct acknowledgment of the uselessness of treatment which we find in medical text-books, clearly shows that the search after a true remedy has hitherto been fruitless. Empiricism having entirely failed, it only remains to be seen whether a greater means of success is to be attained by patient scientific research. I now purpose to give the outlines of an investigation which I began two years ago, but which circumstances have hitherto prevented me from completing. I should not have brought it before the Association in its present imperfect state were it not that I find a remedy, which my experiments had indicated to me as one likely to be beneficial, has lately been tried empirically in America with good results,[1] and I hope that others may be induced not merely to give this remedy a fair trial but to search for other medicines possessing properties which I am afraid this one lacks.

The cause of cholera is now generally admitted to be a poison of some sort, which can be conveyed about from place to place and transmitted from one person to another, through the medium of the evacuations which either get into water and are drunk, or become dry and are taken into the mouth and nostrils in the shape of dust. Some, even yet, are inclined to hold that cholera results rather from peculiar atmospheric and other conditions, than from the presence of a specific poison, but the fact that the disease may be conveyed from one infected locality to numerous others by a single individual, breaking out where he has stopped and passing over those places which he has only travelled through, although these may present apparently identical conditions of air, sea, and water, shows conclusively that an outbreak of the pestilence cannot be due to these latter circumstances alone. Nor will the mere presence of the poison always produce cholera, for those who are exposed to contagion do not all become affected, and even those who have swallowed cholera stools in which the poison is supposed to be present in its most concentrated form have sometimes escaped with impunity. It would appear that two conditions are required, viz.: the presence of the poison and the existence of a proper soil for its development. In other words, it would seem that the poison does not produce its usual effects even when it has entered the system, unless the blood and tissues are in such a state that it can act upon them. The nature of this state we cannot exactly define, but its presence seems to be due in great measure to those conditions of atmosphere and soil which some assert to be the immediate cause of the disease, but which in reality only predispose to it.

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[1] Saunders, American *Practitioner*, July, 1873.

Without entering into this question at any greater length, I shall assume that cholera is caused by a specific poison acting upon an organism which has become in some way or other susceptible to its influence. The effects of the poison upon the body may be summed up in a few words. It produces irritability of the digestive canal, immoderate secretion from the intestines, and lessened circulation both through the lungs and the body. Bearing in mind these actions it is perfectly easy for any one to deduce from them all the symptoms which are observed in the state of cholera collapse.

From the irritability of the stomach and intestines there is constant vomiting and purging. The secretion from them is so profuse that the whole intestinal canal is speedily washed clean out; the stools are no longer feculent nor even tinged with bile, but consist of the secretion alone, pure and unmixed and resembling rice-water in appearance. The blood is thus drained of its fluid parts, and the consequence of this is intense thirst, which adds greatly to the sufferings of the patient. The blood itself, instead of coursing rapidly through the vessels as it does in health, stagnates in the great veins of the thorax and abdomen (see diagram), the left side of the heart, instead of receiving from the lungs a full supply of well-aërated blood, which it would propel through every part of the body, receives only a scanty driblet which leaves it almost collapsed; the arteries which proceed to the body are so empty that when they are cut across hardly a drop of blood flows from them, and even when a tube is passed through the carotid artery and aorta right up to the sigmoid valves of the heart, as was done by Dieffenbach,[1] no blood can be drawn from it. The warm blood from the interior of the body which usually circulates in the vessels near the surface, imparting to it the plumpness, warmth, and rosy hue of health, stagnates in the abdominal veins and leaves the skin shrunken, pale, and cold, while that in the interior of the body being no longer cooled by circulation near the surface, becomes hotter and hotter till the internal temperature of the unfortunate patient is higher than it usually is in high fever, though his skin and breath are cold as ice.[2] The blood which fills the small cutaneous veins being no longer driven forward by fresh supplies from the arteries, becomes completely deoxidized and black, imparting to the surface a livid hue. So dark does the blood become that it assumes the colour of bilberry juice,[3] and the colouring matter leaves the corpuscles and tinges the serum.[4] It still retains its power to take up oxygen and give off carbonic acid,[5] but notwithstanding this is passes so slowly through the pulmonary vessels that only about one-third of the usual quantity of carbonic acid is given off from the lungs,[6] and little oxygen being taken in there is a distressing feeling of want of breath. The voice at the same time is hoarse, low, and weak, but this seems to be simply a consequence of the general exhaustion of the patient.

Such are the symptoms of cholera, all rising from disturbance of the circulation and excessive intestinal secretion. The remedy we seek must, therefore, be one which has the power of removing these conditions It may be thought that the only way to do this is to eliminate from the body the poison which is producing these results, and that so long as it is still circulating in the blood any remedy which is simply intended to counteract its effects will be administered in vain. But the researches of Fraser[7] and others on antagonism have shown us that the elimination of a poison is not required in order to prevent its injurious or fatal action, for the administration of an antidote will deprive it of its hurtful power, and as it is with other poisons so may it be with that of cholera.

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[1] Dieffenbach quoted by Magendie, *Gaz. Médicale*, 1832, p. 253.

[2] Güterbock, Virch. *Arch.* xxxviii. p. 30.

[3] Niemeyer, *Symptomatische Behandlung der Cholera*, p. 13.

[4] Parkes, on *Cholera*, p. 124.

[5] This is shown by its becoming red on exposure to air, Parkes *Op. cit.*, p. 113.

[6] Rayer, *Gaz. Méd.*, 1832, p. 278, and others quoted by him.

[7] Fraser, *Transactions of the Royal Society of Edinburgh*, vol. xxvi.

While thinking over this subject two years ago it occurred to me that if any poison should possess actions similar to those of the cholera-poison, an antidote to it might possibly prove to be a remedy for cholera. It was by no means certain that it would do so, but still in this direction seemed to be the one in which the search after a cure for cholera might be prosecuted with the greatest chance of success. I therefore began to look for a drug which would produce the same changes in the circulation which I have described as occurring in cholera. These were, I believe, first ascribed by Dr. Parkes[1] to spasmodic contraction of the vessels in the lung, which prevented the blood from passing through them, and this opinion has found a warm supporter in Dr. George Johnson. It will be readily seen that almost all the symptoms can be explained on this supposition, though there are some, as I will afterwards show, which this hypothesis does not include. The obstruction to the passage of blood through the lungs causes breathlessness by keeping the blood from the air, just as readily as it could be done by a plug in the windpipe keeping the air from the blood. The left side of the heart getting little or no blood becomes empty, the arteries do not bleed when cut,[2] the surface gets shrunken and pale, while the veins get distended, and the right side of the heart is found, *after death*, to be full of blood.[3]

If, then, Dr. Parkes's and Dr. Johnson's idea regarding the arrest of circulation were correct, the first thing to be found was some drug which would remove the contraction of the vessels in the lungs.

Some time previously, my friend Professor Schmiedeberg, now of Strasburg, had discovered and islolated a new alkaloid from a poisonous mushroom, the *Amanita Muscaria* or *Agaricus Muscarius*, and had investigated its physiological action. Among other things, he noticed that when given to animals it caused great dyspnœa.[4] At the same time the arteries became empty so that when cut across hardly a drop of blood issued from them, the very condition which I have already mentioned as existing in cholera.[1] From a peculiar action which it exerts upon the heart of the frog, and which is removed by atropia, he administered atropia to the warm-blooded animals suffering from the symptoms just described in the hope that it would counteract the effects of muscaria in them, just as it did in the frog. His anticipations were completely realized, and the symptoms at once disappeared after the antidote had been given. My friend had not thought at all of contraction of the pulmonary vessels as a cause of dyspnœa; he attributed it rather to excitement of the nervous centre in the medulla oblongata which regulates the respiratory movements, and the effect of atropia in removing the dyspnœa greatly puzzled him, for atropia itself excites the nervous centre, and ought, according to my friend's supposition, to have increased instead of removing the breathlessness.[2] Although he had only a very little of the alkaloid himself, Professor Schmiedeberg had very kindly given me some, and as soon as the idea that the dyspnœa was due to contraction of the pulmonary capillaries suggested itself to me I proceeded to test it by experiment. I first gave a rabbit such a dose of chloral hydrate as completely to deprive it of all sensibility, then put a tube in the trachea and connected it with a pair of bellows. I was thus able to inflate the animal's lungs at regular intervals and keep up respiration artificially when the animal could no longer breathe itself. I next opened the thoracic cavity so as readily to observe the slightest change in the lungs or heart. Fearing lest my wishes should lead me in the slightest degree to make erroneous observations, I obtained two assistants and made them tell me what they saw without my informing them of what I expected. In all the observations which we made, however, we perfectly coincided, and the results of my experiments being thus attested were carefully noted down. Our preparations being complete, I injected a little muscaria into the jugular vein. Scarcely was the injection finished when the lungs which had previously been rosy became blanched, the right side of the heart swelled up, the veins passing to it became enormously distended, and the left side of the heart almost empty. After allowing this state of things to continue for a short time, I injected a little atropia into the jugular vein—at once the effects of the muscaria disappeared and everything seemed again to present its normal appearance. The lungs again became rosy, the right side of the heart and the veins contracted, and simultaneously the collapsed and shrunken left side of the heart regained its normal fulness.

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[1] [This is an error. Parkes ascribed the symptoms to arrest of the circulation in the lung, but he appeared to think the arrest was due to alteration in the blood, whilst Johnson ascribed it to contraction of the vessels. T. L. B., 1885.]

[2] Dieffenbach quoted by Griesinger, Virchow's *Handb. d. Pathol. u. Therap.*, Bd. II. Abt. 2, p. 327, and by Magendie, *Gaz. Méd.*, 1832, p. 253.

[3] Parkes, on *Cholera*, London, 1847, p. 105.

[4] Schmiedeberg and Koppe, *Das Muscarin*, p. 50.

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[1] *Op. cit.*, p. 57.

[2] *Op. cit.*, p. 56.

This confirmation of my ideas regarding the cause of the dyspnœa induced by the administration of muscaria and the power of relaxing the pulmonary vessels which atropia was thus seen to possess, raised my hopes regarding its usefulness in cholera. But there were other points relating to the action of muscaria and of atropia which I wished to investigate and I did not publish my results. Unfortunately my supply of muscaria failed me and I have been unable to obtain any until a month or two ago, when Professor Schmiedeberg made some more and kindly sent me a fresh supply, as soon as he had finished preparing it. Owing to other engagements I have not yet been able to prosecute my investigations, but hope shortly to do so.

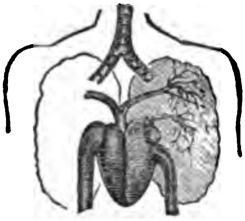

Fig. 30.—Normal.

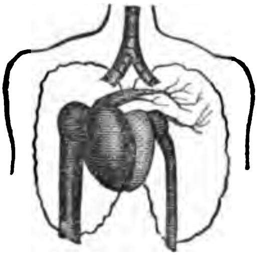

Fig. 31.—Contracted Pulmonary vessels.

I have hitherto proceeded on the assumption that Parkes's and Johnson's theory of cholera is correct, and that the stoppage of the circulation is due to contraction of the arterioles in the lungs. In poisoning by muscaria the right side of the heart seems to be almost as much distended as the great veins of the thorax and abdomen, and exactly the same condition is found in the post-mortem examination of persons who have died of cholera. But it is not certain that the right side of the heart is always distended during life even when the symptoms of cholera are present in their most pronounced form. Indeed it would appear that the veins of the intestines and the vena cava are more widely dilated in cholera than in muscaria poisoning, and hold so much blood that very little of it reaches the right side of the heart, which is therefore almost as empty as the left. There are several reasons for this supposition. The first of these is that an increase in the size of the heart is not to be detected by percussion. On the contrary it is smaller than usual.[1] The second is that the symptoms of cholera are very similar to those of collapse or shock, produced either by mechanical violence or by the presence of a powerful irritant, such as arsenic in the intestines. In this condition the veins are widely dilated.[2] The third is that nitrite of amyl has failed to be of service in cholera. It was first tried in this disease by Drs. Hayden and Cruise of Dublin, who administered it by inhalation. It has the power of dilating the arterioles throughout the body, and, as I have shown, in those of the lung also.[3] It ought therefore to be of great service in cholera, by relaxing the spasm of the pulmonary vessels and allowing the blood to flow from the right to the left side of the heart. But it is found to be practically of little or no use. Indeed, Drs. Hayden and Cruise found that it increased the sufferings of the patient by intefering with respiration. From a knowledge of the action of the drug upon the blood I came to the conclusion that it would not hinder the breathing if it were injected subcutaneously instead of being inhaled, and I mentioned this in a paper which appeared some time ago in the *British Medical Journal*.[4] In consequence of my recommendation Dr. Smith employed it subcutaneously in a case of cholera, and found as I expected that it did not produce any difficulty of breathing. Its action on the circulation, however, was very slight. After each injection the brachial pulse was perhaps a little broader than before, but even this effect was insignificant and very transient.[5] Its action when inhaled was perhaps a little more marked, the pulse becoming somewhat stronger and the surface a little warmer than before, but the improvement was but very slight.[6] If the weakness of the pulse depends only on contraction of the pulmonary vessels, this result would be very astonishing, but if we suppose it to depend on dilatation of the great veins, this is exactly what we would expect.

A fourth argument in favour of the view that there is a great dilatation of the abdominal veins is afforded by the results of the injection of fluid into the circulation. It is evident that all the symptoms which I formerly attributed with Parkes and Johnson to arrested circulation in the lungs, and which I have mentioned in the beginning of this paper as proceeding from diminished circulation, will be produced as readily by dilatation of the abdominal and thoracic veins and stagnation of the blood in them, as by contraction of the pulmonary capillaries. In both cases there will be a very small stream of blood circulating through the pulmonary vessels, little respiratory change in the lungs, small pulse, empty arteries, a cold skin, and high internal temperature. The only difference will be that if the circulation is arrested by an obstruction in the pulmonary vessels, the right side of the heart will be distended with blood, but if the flow is arrested by enormous dilatation of the veins the blood will stagnate in them instead of the heart, and thus the right ventricle instead of being distended will be nearly empty, and the whole organ will be smaller than usual as percussion actually shows it to be. In cholera the profuse secretion from the intestines drains away a great deal of the watery constituents of the blood, and attempts have been made to restore this by injecting saline solutions into the veins. Almost immediately after the injections the symptoms of the collapse disappeared, but returned again after a short while. Part of this improvement was in all probability due to the improvement produced by the injection in the quality of the blood, which was previously too thick, and needed dilution, but it seems highly probable that the increase in its quantity was also useful. For Schiff has lately found that when by means of an operation he produces in animals dilatation of the vessels, the introduction of more liquid into them will again restore the circulation nearly to its normal state, but in a short while the effect of this new supply of liquid is lost, and matters return to their former condition just as in cholera.[1]

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[1] Griesinger, Virchow's *Handb. d. Pathol. u. Therap.*, Bd. II. Abt. 2.

[2] See Fischer, *Ueber Schok.* Volkmann's *Klin. Vorträge*, and Brunton, *Practitioner*, Oct. 1873.

[3] Brunton, *Brit. Med. Journ.*, Jan. 13. 1872, p. 44.

[4] *Op. cit.*

[5] Smith, *Indian Med. Gaz.*, May 1, 1873, p. 123.

[6] Hayden and Cruise, *Op. cit.*

From all these facts it would appear that the veins are really dilated,[2] and if so, we must employ some remedy which will make them contract.

Now there are very few experiments on the contractibility of veins, and hence we know very little about it. It has been found,

[1] Schiff, *La Nazoine*, Aug. 9, 1872, No. 222.

[2] About two months after reading this paper before the British Association at Bradford, I discovered that the theory of dilatation of the veins being the cause of the symptoms of collapse in cholera had been propounded by A. Eulenburg some years ago. *Wiener Med. Wochenschr*, 1866, Nos. 90 and 91.

however, that in the condition of depression or shock which follows severe injuries, in which the great veins are much dilated, the injection of digitalis has been very useful,[1] and if the theory of the causation of cholera collapse which I have advanced be correct, it is likely to prove useful in cholera also.

I do not know whether atropia has a similar action on the veins or not, but it has been lately tried in cholera with great success by Dr. Saunders, of Paducah, Kentucky.[2] He writes, "In the recent outbreak of cholera in Paducah, I treated a number of cases by sulphate of atropia hypodermically—one-fiftieth to one-thirtieth of a grain in water—with the happiest results. The more distressing symptoms—vomiting, purging, cramps—were relieved almost at once, followed by refreshing sleep, continuing in some cases for several hours. I found these effects, however, to follow only when the atropia was used in sufficient quantities to produce the specific scarlatinal rash, dry throat, and dilatation of the pupils. In some cases the relief afforded was astonishing; the skin grew warm, the pulse rose, the surface, previously clammy and shrivelled, assumed its natural condition, and in some instances the patient slept soundly for ten or twelve hours, the bowels remaining undisturbed during the entire time. Of course you will not understand me as advocating the exhibition of the atropia to the exclusion of all other means, especially the use of calomel, to which I attach much importance. In the first case in which I gave the atropia I combined it with morphia (one-fortieth of a grain of sulphate of atropia to one-sixth of a grain of sulphate of morphia), and I think the combination is better perhaps than the atropia alone." I have already mentioned that my experiments with atropia in muscaria-poisoning had led me to expect great benefit from its employment in cholera, but my hopes being founded only on a supposition, viz., that it would benefit the disease because the symptoms resembled those of the poison in some though not in all particulars, I was unwilling to recommend its use until I had some positive facts to bring forward. I accordingly wrote to a friend in India desiring him to try atropia in cholera, some time before I became acquainted with Dr. Saunders's paper. I have had, as yet, no communication from my friend, and it is possible that more extended experiments may show more clearly that, as Dr. Saunders himself observes, atropia alone is not to be absolutely relied on as a remedy in cholera, yet the very encouraging results he has obtained by its use are such as to show that it deserves at the hands of the medical profession a careful and extensive trial.

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[1] Wilks, *Med. Times and Gaz.*, Jan. 16, 1864.

[2] American *Practitioner*, July, 1873.

But any search after a remedy for cholera will be very imperfect if the action of any proposed medicine on the circulation alone is considered, and its effect on the intestinal secretion left out of account. For the latter is probably even more important than the former, and it is not unfrequently present when the changes in the circulation are either slight or absent altogether. I have therefore endeavoured to discover the action of atropia on the intestinal secretion. It has been found that secretion occurs in the salivary glands under two altogether different conditions, viz., when the nerves passing to them are irritated and when all their nerves have been completely divided. In the first case the gland only secretes so long as the irritation to the nerves continues, but in the second it goes on constantly and will continue to do so for days or even weeks, because the nerves have all been cut and in this way paralyzed; the secretion is known by the name of paralytic secretion. Several years ago M. Moreau showed[1] that the same sort of paralytic secretion which has been observed in the salivary glands takes place in the intestine, and the method of experiment which he employed was this:—He kept a large dog fasting for twenty-four hours, so that the intestines should be quite empty. He then chloroformed it and drew out the small intestine through an incision in the abdominal walls. He next tied four ligatures tightly round it at some little distance from each other so as to isolate three pieces or loops of intestine. These still remained attached to the mesentery, along which the vessels and nerves run from the spine to the intestine. Leaving everything else untouched, he carefully cut all the nerves going to the middle loop, and then returned the whole of the intestine into the abdomen, sewed up the wound, and left the animal to itself for several hours. On killing it and examining the intestine, he found that the middle loop was quite full, in fact distended like a sausage by a liquid like rice-water, while the other loops remained perfectly empty. All the loops had been under exactly the same conditions with the exception that the nerves of the middle one had been cut, and therefore this profuse secretion must be due to the division of the nerves. Professor Kühne analyzed this secretion and also the rice-water-looking liquid which is secreted in cholera, and he found that their composition was identical, both being nothing more nor less than very watery intestinal juice.[1] Since the effect of cholera upon the intestine is the same as that of dividing the nerves, we are justified, I think, in believing that if anything can stop the secretion in this experiment it is likely to have a similar effect in cholera. Now atropia has the remarkable power of arresting the secretion from the salivary glands when their nerves are irritated,[2] and also from the sweat glands,[3] rendering the mouth and skin quite dry. What its effect on paralytic secretion in the salivary glands is, I do not know, but thinking that it might possibly arrest the flow of fluid into the intestine, I repeated Moreau's experiment, and at the same time injected some solution of atropia into the vein of the animal. On killing it some hours afterwards, I found, somewhat to my disappointment, that there was fluid in the middle loop. The dose of atropia, however, was not very large, and I comfort myself with the hope that a large dose might do though a small one would not. Whether it does so or not I cannot say yet, for I have not been able to get any large dogs for several months past, and experiments on small ones are in this case very unsatisfactory. For in them the nerves are so fine that it is not easy to be certain that they have been all divided, and so if one should find an arrest of secretion after the administration of atropia, it might be simply due to imperfect division of the nerves and not at all to the action of the drug.

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[1] Moreau, *Comptes Rendus*, 1858, p. 554.

Foiled in my attempts to test the remedy in this way, I had recourse to another plan. M. Moreau found that when three loops of intestine are isolated in the way I have already mentioned, and Epsom salts are injected into one of them without hurting the nerves, the effect is much the same as if the nerves had been cut.[4] I have already said that secretion may be induced in two ways, and it is very probable that this secretion is due to irritation and not to paralysis. However this may be, I tried the effect of atropia upon it both by injecting a mixture of sulphate of magnesia, with sulphate of atropia, into the intestine; and by injecting sulphate of magnesia alone into the bowel, and solution of atropia into the veins. In both cases I used atropia in large doses, which not only dilated the pupil of the animal's eyes till the iris became almost invisible, but were, in fact, so large that we would hardly dare to employ proportionate ones in man for fear of causing immediate death.

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[1] Kühne, unpublished paper read before the Medical Society of Amsterdam, 1868-69.

[2] Heidenhain Pflüger's *Archiv.* V. p. 40.

[3] Sydney Ringer, *Practitioner*, Aug. and Oct., 1872.

[4] Moreau, *Pull. de l'Acad. Imp. de Médicine*, 1870, p. 629.

Notwithstanding this, they had not the slightest influence upon the secretion, which was quite as copious as when no atropia whatever was used.

This result is disappointing and renders the use of atropia in cholera somewhat doubtful, for although the secretion caused by the sulphate of magnesia may be due to irritation, while in cholera it is due to paralysis of the nerves, yet if atropia cannot stop it in the former case it is much less likely to arrest it in the latter. It is, however, always difficult to foretell the effect of any drug under particular circumstances, and so I shall not at present speculate on the action of atropia upon paralytic secretion, but shall test it experimentally as soon as circumstances will permit.

The points in this paper to which I wish to direct special attention are—

1. Assuming Parkes's and Johnson's theory to be correct, and the impeded circulation in cholera to be really due either in whole or in part to obstruction in the pulmonary vessels, my experiments with atropia in muscaria-poisoning show that it is likely to prove beneficial to a certain extent in cholera, and since it has been found empirically to be useful in this disease, it ought to receive a fair trial at the hands of the medical profession.

2. The fact that the right side of the heart is not dilated during life in cholera patients, as well as the uselessness of nitrite of amyl which dilates the pulmonary vessels, show that Parkes's and Johnson's theory is imperfect, and that one of the most important pathological conditions in cholera collapse consists in dilatation of the thoracic and abdominal veins. Any remedy which is to be useful in cholera must have the power of counteracting this condition, and the administration of digitalis in cholera collapse may be useful.

3. The profuse secretion from the bowels in cholera is due to paralysis of some of the intestinal nerves, and a remedy which will arrest it is still a desideratum.

ON POISONS FORMED FROM FOOD, AND THEIR RELATION TO BILIOUSNESS AND DIARRHŒA.

(*'The Practitioner,'* VOL. XXXV., *Aug., Sept., and Oct.,* 1885.)

"WHAT is one man's meat is another man's poison" is a wise saying, embodying the observation of many generations, probably indeed of many centuries. It is only within the last few years that we have begun to discover the true relationship between food and poison, through a number of researches which have been made in the last ten years, and especially in the last five, on the production of poisonous alkaloids from various sorts of food by putrefaction or even by simple digestion. Every now and again we meet with cases of individual idiosyncrasy, in which particular foods produce quite exceptional symptoms. Thus I know a lady in whom a single strawberry causes the face to swell up until the eyes become almost closed (p. 349). But in addition to these very exceptional cases, we meet with numbers of people—we might almost say classes of people—to whom certain kinds of food are more or less injurious. Milk and eggs are two of the most valuable foods we possess, and in cases of sickness where the patient is unable to take solid food, or in typhoid fever, where farinaceous foods, however easy of digestion, are, sometimes at least, injurious, milk and eggs are invaluable. Yet both milk and eggs appear to be more or less injurious to many healthy persons, and have the evil reputation of being bilious. If we inquire more precisely what is meant by this term we find that these foods are apt, when taken at all freely, to produce sensations of discomfort which are referred partly to the digestive and partly to the nervous system. Sometimes these sensations appear within one or two hours after taking the particular food which disagrees; at other times they may not appear until its use has been continued for several days. For example, one person, an hour after taking eggs or milk, feels an unpleasant taste in the mouth, general malaise, and a frontal headache. In others, after eggs have been taken for two or three days together, the appetite becomes impaired, the intellect appears less clear, the conjunctivæ slightly yellowish, headache may occur, and the discomfort may culminate in an attack of vomiting or diarrhœa, or both. The vomiting and diarrhœa are sometimes, though not always, preceded by constipation; and both eggs and milk, on account of their constipating quality, are popularly known as "binding."

In some sensitive persons eggs do not merely produce the symptoms of so-called biliousness, but act as violent poisons. A well-marked instance of this kind I have seen in a friend of my own, who was attacked with violent vomiting and purging whenever she happened to take even a very small quantity of egg. So sensitive was she, that on one occasion she was persuaded to eat a small portion of cake by the assurance that it contained no egg. Unfortunately the statement was incorrect, and even the small piece of cake produced the usual symptoms of poisoning by eggs in her. In such a case as this the effect of the food as a poison appears to depend on the individual who takes it. With certain articles of food, which occasionally produce poisonous effects, these effects may be due in some instances to the individual who takes them, but in others to changes in the articles of food themselves. Thus cucumbers and melons are apt to bring on diarrhœa, which may be due in some cases to a peculiar sensitiveness of the persons who eat them, but in other cases the disagreeable consequences may ensue from an accidental development of purgative principles in the fruits themselves. There appears to be a tendency to the formation of purgative substances in all plants belonging to the natural order Cucurbitaceæ, of which the cucumber and melon are members. In the colocynth and elaterium plants the purgative properties acquire a high development, and even the cultivated melons and cucumbers appear sometimes to show a tendency to reversion in the same direction, and to acquire purgative properties more or less strong. In the case of animal food we find that poisonous properties are apt to appear either from particular modes of cooking, or from commencing decomposition. Thus, meat which has been baked in a pie, without a hole in the crust by which to ventilate it, is more apt to disagree than the same meat boiled or roasted. Meat which has been kept until it has become high, or fish which has become tainted, is also very apt to produce symptoms of poisoning.

Till within the last few years we have been very much in the dark regarding the causes of the different phenomena just mentioned, viz.: the tendency of milk and eggs to produce biliousness, or to be actually poisonous to certain persons, and of nitrogenous food such as meat, fish, or cheese to act as poisons when putrefaction has commenced, or of farinaceous food such as rye and maize to become poisonous when attacked by fungi. Even yet a great deal remains to be done before the subject is thoroughly cleared up, but so much has been done by recent researches that it may be useful to give their results shortly and to indicate the bearing of these results on the pathology of disease, and more especially on the pathology of biliousness and diarrhœa. The cardinal fact which results from all these researches is that albuminous, or perhaps to speak more correctly proteid, substances which are themselves foods may be split up so as to yield poisons. This decomposition is usually originated by various species of low organisms, and especially of bacilli, but it may be effected by the digestive ferments of the healthy body. The poisons formed by the decomposition of proteid bodies such as albumen, fibrine, and gelatine vary not only according to the particular body which is decomposed but to the particular organism or ferment which sets up decomposition, and according to the temperature at which it occurs and the length of time that it continues. Some of the products of the decomposition of proteid bodies are poisonous, others are innocuous. Amongst the poisonous bodies we find various degrees of activity, some being but slightly poisonous, while others are most virulent. When these poisonous products are separated from each other and isolated, they may remain unaltered and retain their properties for a length of time, but, when mixed together, they are apt to undergo further decomposition and become inert.

In order to make it easier to remember and understand these different changes, I may perhaps be allowed to use a very homely comparison between the food we eat and the utensils we employ at our meals. Albuminous food will ordinarily do us no harm, although a large quantity of it eaten at once may mechanically produce uncomfortable distension of the stomach. The glass tumbler or earthenware plate that we use in taking our food or drink are also safe to handle, and will do no harm unless they strike with exceptional violence against some part of the body. But this holds good for albumen and for our utensils only while they remain whole, though the nature of the wholeness is different in the two cases, being chemical in that of albumen and mechanical in that of the utensils. When the tumbler or plate is broken across, the sharp edges may render them liable to cut the fingers, but the pieces may be put together with cement and they again become useful as before. When the chemical molecules of which albumen is composed are broken up in the process of digestion into peptones, these molecular fragments become dangerous, and peptones, when injected directly into the jugular vein, act as powerful poisons, producing loss of coagulability of the blood, fall of blood pressure, and death. But in the healthy body the peptones, formed by the digestion of albuminous matters in the digestion, do not enter the general circulation. Like the broken plate they appear to be cemented again into the kind of albumen known as globuline, during their passage through the portal vein and the liver. But it is not when the tumbler is merely broken in half, or albumen simply decomposed into peptones, that the fractured products are most dangerous. It is when the tumbler is broken into splinters that the pieces are most likely to produce serious injury; it is when albumen has been split up so as to yield organic alkaloids that the products of its decomposition are most poisonous. Amongst the broken glass we may find several pieces which have no sharp points and little, if any, sharp edge, so that they will be almost innocuous, while others may have a point and edge as sharp as a dagger, and capable not only of producing injury but of destroying life, and amongst these sharp pieces we may find some which are much more dangerous than others. In like manner amongst the products of decomposition of albumen we find some which are innocuous and others which are poisonous, and amongst the poisonous we find various degrees of virulency. If we select from amongst the splinters of glass one with a sharp point and edge and lay it aside by itself, it may retain its dangerous qualities unimpaired for years; but if we leave it to be shaken about amongst the rest, and still more if we continue the very process of striking by which the splinter was at first formed, its point will be broken, its edges blunted, and it will become once more harmless. Similarly the poisonous products of albuminous decomposition when isolated may retain their properties unimpaired, but, if allowed to remain together, and still more if exposed to the continuous action of the putrefactive process by which they were at first formed, they undergo further change and again become innocuous. On this account the products of the decomposition of albuminous matters vary much in their poisonous properties according to the time during which decomposition has gone on. At first they are only slightly poisonous, later on they become intensely poisonous, but at a later stage still their poisonous qualities disappear, and they become more or less innocuous.

It is evident that the splinters of glass will vary according to the kind of glass, mode of striking it, and the force which we employ. If we break a large soda-water tumbler we will get longer, stronger, and more dangerous fragments than if we break a wine-glass, but the force which would splinter the wine-glass might simply crack the tumbler, and that which would split the tumbler into dangerous splinters might crush the wine-glass into harmless fragments. In the same way we find that the nature of the albuminous material influences the nature of the products of putrefaction. When putrefactive bacteria are sown on the flesh of mammals, the substance they produce is an exceedingly active poison, neurine, while they produce when sown upon fish another poison differing chemically from neurine although closely allied to it and resembling it also in physiological action. This poison, muscarine, is very interesting, inasmuch as it had only been obtained from a plant, the *Agaricus muscarius*, or fly-fungus, until it was discovered by Brieger to be a product of the decomposition of fish. Brieger has also found that the typhoid bacillus, when cultivated in peptone, forms no poison, but when cultivated in meat jelly or meat infusion it forms two poisons which he has not yet isolated completely. One of these causes salivation, diarrhœa, and paralysis; the other causes violent and exhausting diarrhœa. The importance of an exact knowledge of the substances which are produced by the decomposition of various foods by the action of typhoid bacilli on them is obvious. The plan of treating typhoid fever by an exclusively milk diet has probably saved many lives, but our use of this plan is to a great extent empirical. We do not fully know why it is successful, and although we may suppose that it is because the milk is non-irritating and does not irritate the intestinal ulcers, that is probably only a part of the truth. For milk may, and sometimes does, form very hard clots, which may pass through a great part of the intestine undigested, and as we see in children may actually be voided in this condition. Farinaceous food on the other hand is chiefly digested by the saliva and pancreatic juice before it reaches the lower part of the small intestine, and even if it did pass over the ulcerated surface ought to do no harm by its mechanical action. Acting on this idea I have sometimes given starchy food in typhoid fever, but in a few trials it seemed to cause a rise in temperature, and I therefore abandoned it. If the effect of food in typhoid fever is a purely mechanical one upon the ulcerated intestine, calf's-foot jelly ought to be tolerated; but if the typhoid bacilli decompose gelatine so as to produce alkaloids having a violent purgative action, the jelly will be very injurious.

The temperature at which the putrefactive processes occur greatly influences the rapidity with which the albuminous substances split up, and the nature of the products which they yield. When the temperature is low decomposition occurs slowly, but does so quickly when it is high. It is probable that it may be much modified by other factors, such as the quantity of moisture in the albuminous substance itself, or in the atmosphere generally; and also by electrical atmospheric conditions, such as those which occur before or during a thunder-storm, for it is an old observation that meat as well as milk often becomes tainted during the electrical conditions which are popularly expressed by the term "thunder in the air." The difference between the products of decomposition in hot and cold weather is illustrated by the alkaloids obtained from decomposing maize in summer and winter. The alkaloid which it yields in winter has a narcotic and paralysing action; but when it decomposes during summer it yields, in addition to this alkaloid, another one which has a tetanising action somewhat like strychnine. As the putrefactive processes go on more quickly during summer albuminous substances become poisonous much sooner than in winter, and again lose their poisonous properties more quickly by the progress of decomposition. As putrefaction may go on to a certain extent after the introduction of food into the intestinal canal, and will probably from the higher temperature and greater moisture go on even more quickly than outside, it is evident that poisons may be formed from the part eaten, and produce dangerous symptoms, while no poison can be found in the remaining parts of the same food. This is perhaps of special importance in regard to milk when used as a food for infants. Milk may apparently be quite sweet at the time it is given, and yet it may be really "on the turn," as the term is. When swallowed by the infant it may rapidly become sour, and disagree, while a portion of the same milk, especially if kept cool, may appear to continue sweet for some hours afterwards. It is highly probable that not the least advantage possessed by milk drawn directly from the breast, over that given by a bottle, is that the former is free from bacteria with which the latter is apt to be contaminated. Both may appear to be equally sweet when administered to the child, but the organisms present in the baby's bottle will continue their action after the milk has been taken, and render it liable to produce vomiting and purging, which, as we shall presently see, are symptoms of poisoning by putrefactive alkaloids.

The risk of contamination is much greater when a bottle with a long tube is used, for the bacteria readily find a lodgment in it; and it is to be remembered that not only do the bacteria present in the milk at the time it is swallowed continue to decompose it in the stomach, but they continue to multiply, so that if even a few are present in the milk when it is taken they may within a short time multiply greatly, and produce extensive changes in the food if they find conditions favourable to their growth in the intestinal canal.

I have already mentioned that even the primary products of albuminous decomposition by digestive ferments such as peptones are poisonous. But Brieger has lately shown that pepsine will split up albuminous substances still further, so that by digesting fibrine with artificial gastric juice he has obtained an alkaloid to which he has given the name of peptotoxine.

The bitter taste which appears during the digestion of meat, or of milk artificially, is suggestive of the formation of some alkaloid, but I do not know whether Brieger has ascertained this bitterness to depend on the presence of an alkaloid or not. Of late years the use of digestive ferments, and of artificially-digested foods, has become so common that a study of the products of albuminous decomposition is becoming of extreme practical importance, for it is possible that digestive ferments, like other powerful agents, may be edged tools, and capable of doing harm as well as good.

When we consider how many conditions influence the nature of the products of albuminous decomposition we cannot be astonished to find that very different substances have been attained by different experimenters. The chemical operations required to isolate the different products are so complicated and laborious that most experimenters have been satisfied with obtaining extractiform bodies, and have not attempted to crystallise them. But without obtaining them in a crystallised form one cannot be sure that they are pure, and the recent investigations of Brieger are therefore of great importance, because he not only obtained several products of decomposition in a crystalline form, but has subjected them to organic analysis, and thus ascertained their chemical composition. The products of decomposition, or, as returning to the illustration we have already used, what we may term the splinters into which the albuminous molecule breaks up, are partly poisonous and partly innocuous. One fragment, as we may term it, which Brieger has got from flesh, is a substance called neuridine, which is innocuous, another, neurine, which is poisonous. From decomposing fish he has obtained a third substance, muscarine, which is more poisonous still, and two other substances, ethylenediamine, which is also poisonous, and gadinine, which is innocuous.

Besides the substances which Brieger has got from decomposing flesh, fish, and cheese, in which decomposition has been artificially induced, he has obtained from human corpses, a different set of bodies, one of which he calls cadaverine, and the other putrescine, which are feeble poisons, and two others which are produced later and are more powerful poisons, causing paralysis and death.

In addition to the alkaloids obtained by Brieger, a number of poisons have been got by other workers from decomposing articles of food or from dead bodies, and even from portions of healthy animal bodies. Although these may perhaps not have been got in the same state of purity, nor have had their chemical constitution so well defined as Brieger's, they are still of great interest and importance. It is evident that when putrid substances are introduced into the body we must be careful to distinguish between the effects produced by the poisonous products of albuminous decomposition and those of the bacteria themselves, for the bacteria after their introduction may act upon the blood and tissues, and form poisons within the body itself even though none were present in the matter injected. Kerner appears to have been the first to suspect the formation of alkaloids by the decomposition of albumen, and in 1820 he pointed out the resemblance between the symptoms of poisoning by sausages and by atropine. He made experiments upon animals, and appears to have thought at first that an alkaloid was present in the poisonous sausage, but afterwards he forsook the idea and regarded the fatty acids as the poisonous agent.

The researches of Magendie and Gaspard on the effects of decomposing organic substances were important, but rather as affording a starting-point to researches on the effects of low organisms on the animal body than on the effect of chemical poisons produced in the putrefaction.

In 1856 Panum showed that the inflammatory change which occurs in the intestinal mucous membrane of animals poisoned by putrid matter is not due to the microbes contained in it, but to a chemical poison which remained unaltered when its aqueous solution was boiled for a long time. His conclusion that the poison contained in putrid matter was of a chemical nature was confirmed by C. O. Weber, Hemmer, Schweninger, Stich, and Thiersch.

Bergmann and Schmiedeberg isolated a crystalline poison from decomposing yeast, to which they gave the name of sepsine.

Bence Jones and Dupré found a substance resembling quinine in the liver.

Zuelzer and Sonnenschein obtained both from macerated dead bodies and from putrefied meat infusion small quantities of a crystalline substance which exhibited the reactions of an alkaloid and had a physiological action like atropine, dilating the pupil, paralysing the muscular fibres of the intestine, and increasing the rapidity of the pulse.

Rörsch and Fasbender obtained from dead bodies a substance which had properties like digitaline, but which was not crystalline.

Gautier obtained from putrefied proteid substances, and also from the secretions of living beings, alkaloidal bodies having a poisonous action. But the greatest impulse to the study of putrefactive poisons was given by Professor Selmi of Bologna, whose researches were unfortunately too soon brought to a close by his death. To alkaloids formed by the decomposition of proteid substances he gave the name of ptomaïnes, by which they are now known. It was at first supposed that these differed in their nature from organic alkaloids formed by vegetables, and various reactions were given to distinguish between them. Recent researches appear to show that this distinction can no longer be maintained, and that both animal and vegetable alkaloids are similar in their chemical constitution, and are both products of albuminous decomposition. I have already mentioned Brieger's discovery that an alkaloid peptotoxine is formed during the digestion of fibrine by artificial gastric juice. Pellicani has found a poison in the suprarenal capsule, and sometimes ptomaïnes may be obtained from the flesh of healthy animals. It is, therefore, probable that poisonous alkaloids are continually being formed in healthy men and animals by the decomposition of albumen in the intestinal canal during the process of digestion, or in the blood and tissues generally by the metabolism which occurs during the functional activity. A considerable portion of these alkaloids is in all probability destroyed in the body, but some are excreted in the urine and fæces, from both of which powerful poisons have been extracted.

It used to be an old saying that nature never provided a poison without providing an antidote, and the fact that the dock leaf and the nettle usually grow together is often pointed to as an illustration. In the case of poisonous alkaloids there seems to be a good deal of truth in this saying, for various poisonous alkaloids which have an antagonistic action to each other appear to be produced by albuminous decomposition. It has not yet been ascertained how far the symptoms of poisoning from decomposing fish, flesh, or sausages, or from the retention of morbid products of the organism itself, such as we see in cases of uræmia, depend upon a single poison or on a mixture of poisons. It seems, however, very probable, that in many such cases we have more poisons than one, and that the comparative absence of symptoms in some cases may be due to one poison counteracting another. Brieger has found that two of the most important alkaloids produced by putrefaction are neurine and muscarine; and to these may be added a third substance, choline. Choline is obtained by boiling bile, brain, or yolk of egg, with baryta, and gets its name of choline from its having first been obtained by treating bile in the way just mentioned. It has for some time back been considered to be identical with neurine, but Brieger has been led by his recent researches to regard choline and neurine as two different bodies, though very closely allied in their chemical constitution. By oxidising choline, obtained either from bile or from yolk of egg, with strong nitric acid, Schmiedeberg and Harnack have prepared artificial muscarine, which is almost, though perhaps not quite, identical with that which is found naturally in a poisonous mushroom (the *Amanita muscaria*). Recently Boehm has subjected choline and muscarine to a careful examination, and while he finds that their action is somewhat the same in kind, it varies in degree; muscarine being very much stronger than choline, and having a marked action on the heart of the frog which choline lacks. Artificial muscarine differs also to a certain extent from natural muscarine, inasmuch as the artificial alkaloid possesses a paralysing action on the ends of motor nerves, somewhat resembling that of curara, while the natural muscarine, if it possesses this action at all, has it only to a slight extent. With small doses the effects of artificial and natural muscarine are almost identical, and it is only when the dose is large that the paralysing action upon the motor nerves of the artificial muscarine becomes evident. It may be said that all three bodies—choline, neurine, and muscarine—have a similar action, but choline is much weaker than the other two. The lethal power of neurine is nearly ten times, and that of artificial muscarine fifty times, as great as that of choline. The most marked symptoms which they produce are salivation, diarrhœa and vomiting, dyspnœa, paralysis, and death. They seem to stimulate the secretion of glandular organs, because along with salivation there is also a flow of tears, and the secretion of bronchial mucus is rendered abundant and fluid, as is shown by the occurrence of abundant moist *râles* within the chest. The dyspnœa, however, is not entirely due to abundant secretion of bronchial mucus in the lungs, because even in frogs choline produces a peculiar alteration of the respiration and dyspnœic movements.

Muscarine and neurine produce in frogs a complete arrest of the cardiac pulsations, the heart stopping in diastole;[1] but this cannot be regarded as the cause of the dyspnœa, because the respiratory movements in frogs are not dependent on the circulation in the same way as they are in warm-blooded animals. In mammals[2] muscarine and neurine render the beats of the heart slow and weak, but do not usually arrest the cardiac pulsations, so that the heart is commonly found to be beating after death has occurred. The dyspnœa produced by muscarine has been attributed by Schmiedeberg to excitement of the respiratory centre in the medulla oblongata;[3] but I am inclined to think that in all probability contraction of the pulmonary vessels may have something to do with it; for one of the most marked points about the action of muscarine, neurine, and choline, is the extraordinary effect of atropine as an antidote to them. In animals poisoned by any of these three substances the subcutaneous injection of atropine stops the salivation, arrests the diarrhœa, and removes the dyspnœa. It also prevents death from these poisons, but only within certain limits: for if the dose be very great, the animals may still die. More especially is this the case with choline and artificial muscarine which paralyse the ends of the motor nerves, because the curara-like action is not counteracted by atropine, but is perhaps rather increased, atropine itself having also the power of paralysing the motor nerves when given in large doses. The effect of muscarine and neurine on the heart is also removed by atropine. It is possible that atropine removes the dyspnœa by destroying the effect of these drugs upon the heart and thus allowing the circulation to go on freely again, Yet as I have mentioned in a former paper, the injection of muscarine causes the lungs to become pale, while the subsequent administration of atropine makes them regain their normal rosy colour, and I am inclined to attribute the dyspnœa produced by muscarine, partly at least, to contraction of the pulmonary vessels, and to regard the dilatation of these vessels by atropine as one of the reasons at least why this drug removes the dyspnœa.

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[1] Brieger, *Ueber Ptomaïne*, pp. 26 and 34.

[2] Brieger, *Op. cit.*, pp. 29 and 34.

[3] Schmiedeberg and Koppe, *Das Muscarin*, p. 50.

Although, as I have already said, we do not as yet know that ptomaïnes, having a physiological action like atropine, are generated in the intestines or in the tissues, at the same time as muscarine, neurine, or choline, it appears quite possible that such may be the case, and that we may have symptoms occurring which are due either to the mixture of two alkaloids or to the preponderance of one or other. A case of uræmia which I saw a few days ago was strongly suggestive of poisoning by a mixture of atropine and muscarine. The secretion of urine had completely stopped, the skin, eyes, and mouth were all dry, the pupil was somewhat dilated, the pulse was beating at the rate of about 130, the mouth was held constantly open, and the breathing was laboured and gasping, but air entered abundantly into the lungs, and there was no secretion of bronchial mucus. All these are symptoms such as we find from poisoning by atropine, but in two respects the symptoms resembled those produced by muscarine, for the skin was pale instead of being scarlet as in belladonna poisoning, and when cups were applied over the region of the kidneys in order to restore if possible the renal secretion, very little blood flowed from the incisions (cf. pp. 255, 256).

I have already mentioned that Zuelzer and Sonnenschein have obtained from putrefying meat infusion, a substance having the chemical reactions and physiological effects of atropine; and some such alkaloid appears to occur frequently in poisoning by sausages, so that in a case of sausage poisoning at Wildbad in 1793 the medical man who treated the case came to the conclusion that some one either through carelessness or design had put belladonna into the sausage.

In another case of sausage-poisoning described by Dr. Kaatzer, a family ate some smoked sausage at their mid-day meal; in half an hour afterwards they became unwell, with feelings of languor fatigue, and drowsiness, yet with such dryness of the mouth that they were unable to sleep, and were obliged to be constantly drinking. In addition to this, the father had obstinate vomiting. Next day the dryness of the throat was so much greater they could hardly swallow, and the sight became affected. On the third day. the symptoms were worse, the pupils were widely dilated, there was double vision, dryness of the mouth and of the nose, and when bread was chewed it was ejected again from the mouth as dry as when it was put in. Next day the child of twelve years old died with symptoms of œdema of the lung; and the father, though much affected, could not weep as his lachrymal secretion was paralysed. The father and mother gradually improved, but on the fourteenth day of the poisoning there was still complete paralysis of accommodation. In all of them, just as in the case of uræmia which I have just mentioned, there was paleness instead of redness of the face—a symptom which I am disposed to regard as possibly indicating the presence of a muscarine-like poison, in addition to one like atropine.

In other cases of sausage-poisoning additional symptoms have been noticed, which point to the existence of a muscarine-like poison also. These are the presence of diarrhœa, alternating with constipation, and of colic. The pulse also is sometimes slow, small, and almost imperceptible—a condition which is typically that of muscarine poisoning, while in atropine poisoning the pulse is rapid from the complete paralysis of the inhibitory fibres in the vagus which the poison produces.

It is possible that instead of there being two or more poisons having a partly antagonistic action there may be only one having an action resembling atropine in some respects and muscarine in others. In some cases of poisoning by fish the symptoms have been those of poisoning by atropine, viz., dryness of the mouth, difficulty in swallowing, weight of the limbs, paralysis of the superior and inferior recti and of the oblique muscles of the eyes, as well as ptosis and paralysis of accommodation, dilatation of the pupil and double vision. The pulse was, however, not quickened as it is in poisoning by pure atropine.[1] V. Anrep[2] states that he has isolated an alkaloid from poisonous fish, which produces similar symptoms to those just described as caused by fish itself, and Vaughan[1] has obtained from poisonous cheese an alkaloid which he calls tyrotoxicon which produces symptoms similar to those caused by cheese or by fish. If the alkaloid should turn out to be perfectly pure we should be obliged to regard them as having an action similar to atropine in many respects, but differing from it in respect to their action on the pulse. When we remember, however, how many vegetable alkaloids previously supposed to be pure have been recently shown to be mixed with others having a perfectly opposite action, we may still regard it as probable that the symptoms of poisoning by sausages, fish, &c., may in many cases be due to a mixture of alkaloids.

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[1] Schreiber, *Berlin. klin. Wochenschr.* 1881, xxi. pp. 162, 183.

[2] V. Anrep, *Vratch*, 1885, p. 213, abstracted in *London Med. Rec.*, 1885, p. 271.

In cases of poisoning by a ptomaïne having a purely atropine-like action, the treatment indicated, which has also been adopted in at least one case, is the administration of physostigma either by application to the eye, or, perhaps still better, by subcutaneous injection. In cases, however, where the symptoms are of a mixed character, our knowledge of the combined effects of the poisons is sufficient at present to enable us to decide with certainty whether medication of this sort would be useful or injurious in any given case, although we may try that alkaloid as a remedy which will tend to remove the most prominent or distressing symptoms. It is evident that if an atropine-like poison is present in the body at the same time with choline, neurine, or muscarine, in sufficient quantity to antagonize them, the effects of those latter poisons will hardly be observed, although they may possibly evidence their presence by producing diarrhœa alternately with constipation. But if they are present alone, they may be expected to produce salivation, vomiting, purging, and collapse, according to the quantity which is taken into the system.

Where the symptoms are markedly those of a muscarine-like poison, we may try atropine as a remedy; and in one case lately it seemed to me to do good. A servant girl had taken at dinner some fried liver, and ten hours afterwards she was seized with vomiting and purging, which lasted the whole night. I saw her next morning and gave her some bismuth and soda, but the vomiting continuing I gave her fifteen drops of tincture of belladonna, and there was no vomiting afterwards. Of course this single case is quite insufficient to found a treatment upon, but I think that the administration of belladonna or atropine may be worth a trial in cases of poisoning by articles of food where the symptoms are those of muscarine or some allied poisons.

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[1] Vaughan, *Detroit Lancet*, August 1885, p. 60.

Four alkaloids which Brieger has isolated from cadavers, viz., neuridine, cadaverine, putrescine, and saprine, have no marked physiological action; but he has isolated from human cadavers in an advanced stage of decomposition two alkaloids having a very powerful physiological action. One of these, when injected into guinea-pigs or rabbits, appeared to affect the intestine alone, and to have no action on any of the other organs. It caused an enormous increase in the peristaltic action, which lasted for several days, and the continuous diarrhœa led to extreme weakness of the animals.

Another alkaloid, which he terms mydaleïn, has a still more marked physiological action, and one which is of great clinical interest, inasmuch as we find amongst the symptoms a rise of temperature. No one who has watched cases of acute disease, such as pneumonia, can have failed to see how a rise of temperature sometimes coincides with the occurrence of constipation, and is removed by opening the bowels. In the case of such an acute disease as pneumonia, one has hitherto been unable to say definitely why constipation should produce this rise of temperature, but it seems not improbable that it may be due to the absorption from the intestine of some ptomaïne. In his work on *Purgative Medicines* also, Hamilton says that in cases of typhus fever the administration of an antimonial remedy "was beneficial only when it moved the belly. In this case the fæces were black and fœtid, and generally copious. On the discharge of these, the low delirium, tremor, floccitatio and subsultus tendinum which had prevailed were abated; the tongue, which had been dry and furred, became moist and cleaner; and a feeble creeping pulse, acquired a firmer beat."

The action of mydaleïn is according to Brieger perfectly specific in its nature. When a very minute quantity of it is injected into guinea-pigs or rabbits the under-lip in a short time becomes moist, the nasal secretion becomes more abundant, and a copious secretion of tears occurs. The pupils then become dilated, the vessels of the ear become much injected, and the rectal temperature rises from 1°—2° C. The pupils gradually dilate to the maximum and cease to react to light. The coat of the animals becomes staring and sometimes they tremble; gradually the secretion of saliva diminishes, the respiration and pulse, which at first were very rapid, become slower, the temperature falls, the ears become paler and the animals recover. During the action of the poison the animals show a tendency to sleep, and the peristaltic action of the intestine is increased. When larger doses are injected into guinea-pigs, even although they are still under half a centigramme ($\frac{3}{40}$ of a grain), their action is exceedingly violent and always fatal. The secretion of all organs composed of involuntary muscular fibre becomes exceedingly profuse; and the saliva becoming mixed with the intestinal discharges, the animals constantly lie in a puddle, especially as the power of motion is impaired; exophthalmos occurs and the dilated pupils are difficult to examine on account of the profuse lachrymal secretion. When the action of the poison has attained its maximum the animals fall down, first the hind legs and then the fore legs becoming paralysed; fibrillary twitchings are visible in various groups of muscles, and the respiration becomes more and more violent and gasping. Sometimes the animal makes a sudden upward spring, raising its head and gasping for air; then it sinks down again and lies in its excrement, making slight defensive movements with its legs. The temperature gradually sinks, the movements become slighter and slighter, and finally the animal dies. On post-mortem examination the heart is found standing still in diastole and the bladder and intestine are contracted, but there is nothing else abnormal. In cats mydaleïn caused dilatation of the pupil; profuse secretion of tears, saliva, and sweat, vomiting and diarrhœa: to these succeeded paralysis first affecting the hind-legs and then the fore-legs, occasionally convulsive twitchings, laboured breathing, coma, and death. On post-mortem examination the heart was found standing still in diastole, the intestines contained a little thin fluid secretion, and the mucous membrane was injected. This alkaloid is, as I have already said, very interesting from the rise of temperature which it produces; but we do not as a rule find all the symptoms here described as characteristic of poisoning in animals occurring usually in men, either in cases of disease or in consequence of poisoning by decomposing food, although a number of them may occur. It is possible that the occurrence of some and not of others may be due to the occurrence in disease of alkaloids allied to mydaleïn, although not identical with it; or to the presence of two or more alkaloids which partially neutralise each other's effects.

It is quite evident that it would be unjustifiable to conclude that because alkaloids are formed by the decomposition set up by bacteria in albuminous matters outside the body, they are therefore formed constantly within the body, either in health or disease, however probable such a conclusion might be. But positive evidence that such a formation of alkaloids does occur in the intestine is afforded by the fact that alkaloids are found in the freshly voided fæces.

That alkaloids are present in the circulating blood, is shown by the fact that they are separated from it by the kidneys, and are found in the urine. The effect of ptomaïnes formed in the body in producing disease has been investigated by Bouchard, who has found that the poisonous activity of human fæces is very great, even when they are quite healthy, and a substance obtained from them by dialysis, produces violent convulsions in rabbits. Bouchard considers that the alkaloids formed in the intestine of a healthy man in twenty-four hours would be quite sufficient to kill him if they were all absorbed and excretion stopped. When the functions of the kidneys are impaired, so that excretion is stopped, uræmia occurs: and to this condition Bouchard would give the name of stercoræmia, because he thinks it due to alkaloids absorbed from the intestines. The nervous disturbances which occur in cases of dyspepsia, and of dilatation of the stomach, he thinks are due to nothing else than poisoning by ptomaïnes. Lépine and Mollière describe the case of a man suffering from intestinal constriction, who suddenly became ill and died in two days with all the symptoms of atropine poisoning, redness of the skin, delirium, dryness of the throat, extreme dilatation of the pupils with loss of reaction to light and rise of temperature. There was nothing to show that the patient had taken atropine or belladonna, and Lépine and Mollière consider that he died from ptomaïnes formed in the bowel and absorbed from it. They found in the contracted intestine a fæcal mass having a particularly bad smell, and they think that it was the source of the poisoning.[1] There seems to be little doubt that the amount of ptomaïnes formed in the body in disease is greater than it is in health; and very probably they are of a different character, possibly varying with the disease. According to Lépine and Guerin the poisons contained in the urine in different diseases differ in their physiological action. The extract obtained from the urine in cases of typhoid produced in frogs increased reflex action and death after three hours, the heart being usually found in a state of diastole.

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[1] *Lyon Méd.*, No. 42, 1881.

In cases of pneumonia the urine had a similar action, except that the heart was found in a more or less contracted state, varying with the severity of the case from which the urine had been obtained.[1] One author has gone so far as to consider that the immunity which one attack of an infective disease confers against a subsequent one, is due to alteration in the body, not by bacteria, or other low organisms, but by a chemical substance which they produce; and he has proposed to afford protection against the disease by cultivating the bacteria artificially and inoculating with the poison which they produce without the bacteria themselves. This does not seem a very promising method of treatment, but we are likely to obtain most useful information regarding the proper diet in disease, and especially in cases of intestinal disease, by observations on the nature of the poisons which bacteria produce when cultivated in different kinds of food.

This investigation has been begun by Brieger, who found that the typhoid bacillus, although it grew well in peptone, appeared to form no alkaloids from it—at least he was unable to obtain any. When he cultivated it in beef-tea, however, he obtained as a product of decomposition an exceedingly small quantity of ptomaïne, which had a marked peculiarity in its action, namely, that after death from it the heart was found constantly in a state of systolic contraction, whereas most of the other alkaloids obtained from putrefying substances, such as muscarine, tend to produce stoppage of the heart in diastole. This alkaloid when given to guinea-pigs caused slight salivation and increased rapidity of respiration; later on the animals lost control of the muscles of the extremities and trunk, although there was no definite paralysis of the muscles themselves. The pupils became dilated and no longer reacted to light, salivation was profuse, and there was constant diarrhœa; the respiration and pulse became slower, but sometimes the animals did not die until after twenty-four or forty-eight hours. On *post-mortem* examination, in addition to the systolic contraction of the heart already mentioned, hyperæmia of the lungs was found, but the other organs were pale. The intestines were firmly contracted, and their walls were pale. Most of the alkaloids which have been obtained by the decomposition of albumen appear to belong to the muscarine type, and to have a tendency to cause diarrhœa, although some appear to belong rather to the atropine type, which, to a certain extent, counteracts the effects of muscarine.

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[1] *Lyon Méd.*, No. 24, 1884.

No alkaloid having a well characterised chemical formula appears as yet to have been isolated from cholera stools, but Nicati and Rietsch[1] have produced choleraic symptoms in animals by cultivations of the comma bacillus from which the bacilli themselves had been removed; and somewhat similar results were obtained several years ago by Lewis and Douglas Cunningham with cholera stools, in which any organisms present had been destroyed by boiling. In view of the extraordinary activity of some of those alkaloids, we cannot wonder at the violent symptoms which sometimes occur after the use of tainted meat, nor even at the extraordinary poisonous action of eggs in some persons. It is probable that the diarrhœa and vomiting which are produced by tainted meat, are due to the poison formed from the albuminous substance of the meat, by low organisms, either before it has been consumed, or by decomposition in the intestinal canal itself. In most persons eggs are harmless, but the yolk of eggs contains, in considerable quantity, lecithin from which choline may be readily formed; and if we suppose that in certain individuals choline, or perhaps even muscarine, is formed from eggs during digestion, we can readily see why this useful article of diet should prove to such persons a violent poison. It is more difficult to say why milk should, in some persons, prove poisonous. Milk also contains lecithin, but in small quantity; and all we can say about it at present is that, in some individuals, a poison is probably formed from it, which causes it to disagree.

But even when milk and eggs do not cause any immediate disturbance of the digestive functions, they sometimes produce, when taken for several days together, a condition which is generally termed biliousness. It is rather hard to define this condition, inasmuch as the term is an elastic one and includes a number of symptoms. Amongst them may be said to be a tendency to eructation and acidity with an appetite which sometimes is very good, sometimes is bad, and sometimes is capricious. These symptoms may depend upon the condition of the stomach itself, but they may also be due to derangement of the liver, for all the venous blood from the stomach must pass through the liver on its way to the general circulation, and any obstruction to the hepatic circulation will produce venous congestion of the stomach and consequent disturbance of its functions. But these symptoms are not unfrequently accompanied, or succeeded after an interval of a day or two, by others which point more distinctly to the liver itself, such as slight frontal headache, a sallowness of complexion, a faint yellowish tinge of the conjunctiva, and a bitter taste in the mouth. These are usually attributed to the presence of biliary matters in the blood, the colour of the face and conjunctiva being attributed to bile pigment, and the bitter taste in the mouth to bile acids. But bile acids are not so very bitter—they are rather bitter-sweet, and healthy bile has no bitter taste, so that it seems that the bitterness in the mouth may, with more probability, be attributed to some alkaloid circulating in the blood, and excreted by the salivary glands. Along with this condition we sometimes find that the stools are pale, and then the explanation of the symptoms is easy, for we at once conclude that there is a catarrhal condition of the stomach and duodenum, and that the swollen mucous membrane presents a mechanical obstacle to the flow of bile from the liver. The pressure of bile in the biliary passages is thus increased, and absorption occurs. This explanation seems so satisfactory that we hardly care to look for another. But it is quite possible that it is not the true one. The real cause may be that the bile has become so viscid that it will not flow through the ducts, and even when the tendency to secrete such thick bile has passed away, the viscid bile already formed may plug the ducts and cause the jaundice to continue, even though the mucous membrane of the ducts and duodenum should be healthy. Moreover, we sometimes find that instead of the stools being paler than usual they are darker than usual, and it seems rather hard to say why we should have more bile than usual passing out into the intestine, and at the same time have bile absorbed into the blood. But here we gain much information from observations on the action of poisons. Schmiedeberg noticed that toluylendiamine, a substance belonging to the aromatic series, produced jaundice; and the action of this substance has been further investigated by Stadelmann. Their observations show that this poison causes increased destruction of blood corpuscles in the liver, with increased formation of bile. At first all the constituents of the bile, both the solids and the water, are increased, so that a greater quantity of bile is secreted; but as the action of the poison goes on the solids are excreted in greater quantity than the water: and so along with a great increase in the biliary solids secreted, the bile itself becomes more and more viscid, until at length it will not flow through the bile ducts, and thus absorption and jaundice takes place—although there is no mechanical obstacle to the passage of the bile into the duodenum. The first stage of the action of this poison corresponds to the condition of biliousness with excess of bile in the stools. It is possible that the second stage may correspond to so-called catarrhal jaundice, especially in epidemics, though it is also possible that the usual explanation of the causation of catarrhal jaundice may be in many cases the correct one.

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[1] *Compt. rend.*, xc. 928.

It is proboble that other bodies belonging to the aromatic series have also a considerable action on the biliary secretion, for salicylate of soda is a powerful hepatic stimulant, greatly increasing the secretion of bile. Unlike toluylendiamine, however, it greatly increases the water of the bile, and renders it thinner instead of more viscid. We do not as yet know what the action of the aromatic compounds formed in the intestine is upon the secretion of bile, but we know that a number of aromatic compounds are formed in the body and are excreted in the urine. These bodies are formed both in health and disease, and carbolic acid occurs in the urine of healthy men. It becomes much increased when the peristaltic movements of the intestine are interfered with;[1] and occurs also in much larger quantity than normally in some cases of infective disease, such as diphtheria, facial erysipelas, pyæmia, and scarlet fever.[2] So far as I know toluylendiamine has not been obtained as a product of albuminous decomposition; but another substance having, like it, the power of producing intense jaundice has been got from lupine seeds. Sheep fed upon these seeds frequently die, and one of the most marked symptoms is intense jaundice. From these seeds Kühne[3] extracted a substance to which he gave the name of ictrogen; and this substance has been further purified by Arnold and Schneidemühl, who give it the name of lupintoxin. It does not appear to be an alkaloid; but rather a substance of an acid nature, but what its exact chemical nature is, has, so far as I know, not been exactly ascertained.

Along with biliousness we frequently find headache, and many severe headaches associated with vomiting are popularly known as bilious headaches. Modern pathology is inclined to regard the so-called bilious headaches as rather of nervous than of hepatic origin, and no doubt they frequently originate in mental conditions such as worry and overwork, and also in defective vision. Still, we are but very imperfectly acquainted with the links which connect excessive worry with pain in the head and vomiting: and I think it is probable that here, as in many other cases, popular opinion is based to a certain extent upon truth. Lately, during the epidemic of cholera in Spain, we have heard the same cry raised as in the Middle Ages, that the wells were poisoned, and the popular belief of the Middle Ages coincides with the result of modern scientific research in pointing to contaminated water as the source of disease, although the poisoning is due to the ignorance or carelessness which allows sewage to enter the wells, and not to the direct introduction of poison by design. Similarly popular belief in regard to headaches is, I think, not entirely mistaken in giving to them the term "bilious," for while they may originate in the central nervous system, the liver may play a not unimportant part in their actual production. In the case of a lady who consulted me a short time ago, I was a good deal struck by her observation, that she was always better after the vomiting although she brought up no bile whatever, and she was puzzled to know how the mere action of vomiting could do good. Her observation to a certain extent corresponds with my own experience, and I am inclined to believe that the relief experienced after the vomiting may be due, in part at least, to the emptying of the gall ducts by the compression which the liver undergoes between the diaphragm and the abdominal walls in the act of emesis. The pressure under which bile is secreted is normally very low, and it is easy to see that if the bile should from any reason be more viscid than usual, mechanical pressure would be exceedingly useful, by tending to press the viscid bile, along with any alkaloid it may contain, out of the liver into the duodenum, and thus to prevent its re-absorption.

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[1] Salkowski und Leube, *Lehre vom Harn*, p. 143.

[2] Brieger, *Weitere Untersuchungen über Ptomaïne*, p. 70.

[3] Quoted by Kobert, *Schmidt's Jahrb.*, 1884, cciv. p. 13.

I do not mean to accuse the bile of being the primary factor in the production of bilious headache. I should be inclined to look upon it more as an accessory, and to attribute the symptoms rather to the presence in the bile of some alkaloidal substance which, on passing into the general circulation, gives rise to vascular disturbance and headache.

We must look to further observations upon the nature of the alkaloids formed by putrefaction; upon the effect of typhoid and other bacilli, on milk, eggs, beef-tea, and other foods used in typhoid fever, to a more exact investigation of the alkaloids formed in the intestine and found in the fæces and urine, and to experiment upon the action of aromatic substances formed in the intestine upon the liver, for further knowledge which may aid us in treating disease, but enough has been already done to show what important effects on the animal body are in all probability produced by the alkaloidal products of albuminous decomposition.

INTRODUCTORY REMARKS ON THE STRUCTURE AND FUNCTIONS OF THE KIDNEY.

('*The Practitioner*,' VOL. XXVII., *August*, 1881.)

THE progress of physiology and histology in recent years has been so rapid that it is difficult for men engaged in practice to keep up with it, and in addition to this difficulty there is yet another, viz. that the great majority of men are unable to retain, unimpaired, the knowledge which they have at one time acquired, unless they are constantly refreshing their memories. Thus it may happen that men who have been for a length of time engaged in practice may not be acquainted with the points in the histology of the kidney which have been discovered of late years, and that others, who have learned these, may have forgotten them. In order to save such practitioners the trouble of referring to special text-books on histology, I have thought that a few notes on the histology of the kidney may not be amiss.

The function of the kidney is to separate from the blood the products of nitrogenous waste, as well as excess of salts, and various soluble substances which may have passed into the circulation. These are excreted in the form of a watery solution which is the urine. The blood which is to be purified passes to the kidney through the renal artery, and returns, purified, from it by the renal vein, and the products of waste pass out through the ureter. These structures enter into or pass out of the kidney at the hilus. The whole organ is covered by a closely-applied fibrous coat, which in the healthy kidney can be readily stripped off. The kidney may be looked upon as a large filtering apparatus, and the funnel into which the filtrate drains is the ureter. The upper end of the ureter is expanded so as to form the pelvis, and into this funnel-like dilatation the filtering apparatus of the kidney projects in the form of small pyramids called the medullary pyramids, or the pyramids of Malpighi. The parts of the pelvis which lie between these are termed the calyces, or infundibula. The substance of the kidney itself consists of two parts—the cortex and the medulla. The medullary part has been again subdivided into the boundary layer or marginal layer, and the papillary layer.

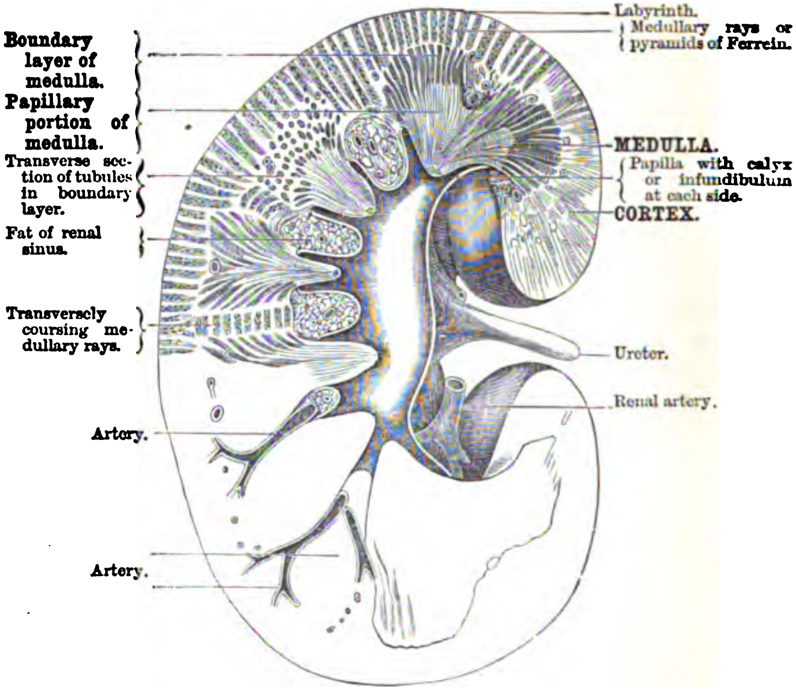
Boundary layer of medulla.
Papillary portion of medulla.
Transverse section of tubules in boundary layer.
Fat of renal sinus.
Transversely coursing medullary rays.
Artery.
Artery.
Labyrinth.
Medullary rays or pyramids of Ferrein.
MEDULLA.
Papilla with calyx or infundibulum at each side.
CORTEX.
Ureter.
Renal artery.

Fig. 32.—Longitudinal section through the kidney. (Modified from Tyson, after Henle.)

When a section of the kidney is made, the cortex is seen to be of a light red colour, and of a granular appearance. It is on an average a little less than a quarter of an inch in width, and dips inwards into the medullary part, so as to divide the pyramids from each other. These prolongations of the cortex are called the columns of Bertin. The pyramids are darker in colour than the cortex, but striated instead of granular. The apex of the pyramid, to which the name of papilla has been given, projects into the pelvis, while its base is in contact with the cortex. The striæ radiate from the apex to the base. These striæ indicate the course of the urinary tubules and of the blood-vessels. The apical portion or papillary portion of the pyramids is somewhat lighter in colour than the basal portion, and in it the striæ are chiefly urinary tubules, the openings of which may be seen on the papilla. In the basal part of the pyramids, or boundary layer, the

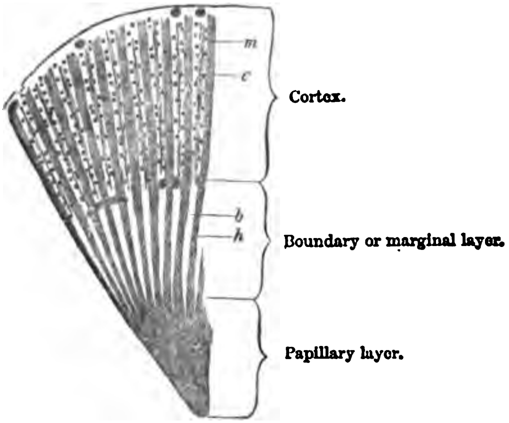

Fig. 33.—Horizontal section of kidney of dog (after Ludwig) :—*h*, fasciculi of urinary tubules prolonged as medullary rays ; *m*, into the cortex ; *b*, blood-vessels ; *c*, cortex proper, with glomeruli.

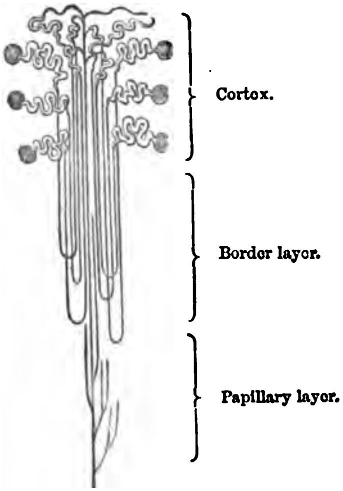

Fig. 34.—Diagram of the course of the uriniferous tubes, showing what parts of them occur in each layer of the kidney-substance.

striæ are not uniform, but run in alternate bands, and these bands indicate that this part of the pyramid is no longer uniform in composition like the papillary portion. The difference between the papillary and boundary layers is due partly to the presence of blood-vessels in much larger number in the medullary layer, and partly also to the uriniferous tubules being now no longer uniform in character. This want of uniformity is due to the presence in the boundary layer of portions of the urinary tubules which have come down into it from the cortical layer, and, after forming in a bend or loop, return back to the cortical layer before finally redescending. To these portions the name of Henle's loops has been given. In the medullary layer both tubules and blood-vessels have a straight course, and thus give a striated appearance to the kidney structure.

In the cortical substance both the renal tubules and the blood-vessels have a convoluted course, and the blood-vessels form numerous tufts which give a granular appearance to the cortical substance. This arrangement is seen in Figs. 33 and 34.

But the cortex is not entirely granular. It consists of alternate bands of granular and striated substance (*c* and *m*, Fig. 33). The striated bands, to which the name of medullary rays or pyramids of Ferrein has been given, are composed of straight uriniferous tubules, surrounded by a longitudinal meshwork of capillaries, Figs. 30 and 32. These straight tubules consist partly of collecting tubes on their way to the papilla, partly of the ascending and descending parts of Henle's loops, and partly of certain convoluted tubules, which instead of forming Henle's loops pass straight down towards the papilla (Rose). To the granular bands (*c*, Fig. 33), consisting of convoluted tubules and vessels, the name of labyrinth, or cortex proper, has been given.

The vessels of the kidney are large in proportion to the size of the organ, and it is to be borne in mind that instead of the arteries subdividing near the hilus, as one might imagine, and then running out towards the cortex, they run outwards between the pyramids as far as the inner surface of the cortex before they divide (Fig. 35). At the junction of the cortical with the medullary substance of the kidney the arteries divide and subdivide, forming arches between the cortical and medullary parts. From these are sent off branches, some running outwards towards the surface, and some inwards towards the pelvis. Those running outwards are termed interlobular arteries, and those running inwards are called the *arteriæ rectæ.* From the interlobular arteries branches are given off which, after a short course, break up into capillary tufts or knots known by the name of Malpighian tufts or glomeruli. The branch going to the tuft is called the afferent artery (*va*, Fig. 36), and the branch going from it, the efferent artery (*ve*, Fig. 36).

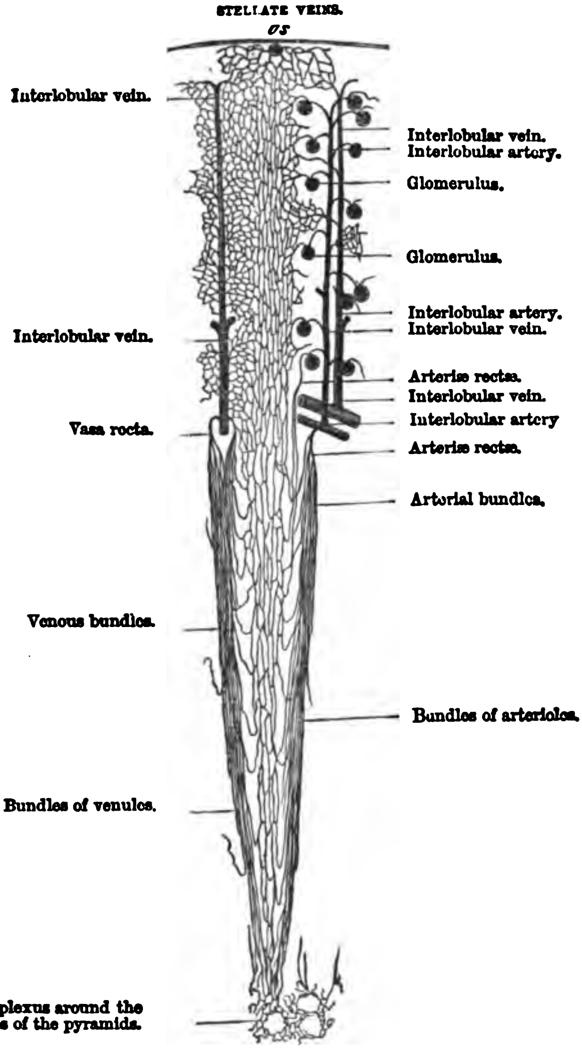

Fig. 35.—Diagram of the blood-vessels in the kidney (after Ludwig).

The efferent artery, almost immediately after its exit, breaks up into a capillary mesh-work (Figs. 30 and 32), spreading around and among the tubules. From these capillaries the blood is collected by small rootlets which anastomose to form the interlobular vein, which runs backwards parallel with the interlobular artery. The vasa recta lie between the uriniferous tubules, running parallel with them. They partly form loops like Henle's uriniferous tubules in form, and partly break up into capillaries, forming an elongated mesh-work from which veins arise, and run back parallel with the arteries (Fig. 35).

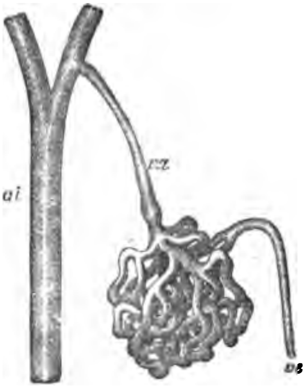

Fig. 36.—Malpighian glomerulus. *va* is the afferent vessel which springs from the interlobular artery *ai*, and breaks up to form the glomerulus; *vs* is the efferent vessel which conveys the blood from the glomerulus.

The kidneys, as we have already said, are a filtering apparatus for the separation of water and soluble matters from the organism. But they are not simply filters, for they have to remove certain substances while they retain others, and to remove those in different quantities and different proportions according to the wants of the organism. There is, then, in the kidney, one part which seems to be devoted to pure filtration, namely, the glomeruli, and another whose function is secretion, viz., the uriniferous tubules. The vessels of the Malpighian tuft are surrounded by a capsule, from which a long, excretary tube leads (Fig. 37). The tuft of vessels may be compared to a porous filter, and the capsule to a funnel, in which the filter lies, and which drains away the filtrate. It has been supposed by Ludwig that the secretion of urine is chiefly a process of filtration, the fluid which drains out of the vessels into

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the capsule of the Malpighian body, containing all the elements of the urine, and that the change which this fluid undergoes in its passage down the uriniferous tubules is simply one of concentration, a considerable portion of the water and some of the solids being re-absorbed by the epithelial cells lining the tubule. It has now been shown, however, by Heidenhain, that this view is not quite correct, and that the fluid excreted by the Malpighian tuft is to a great extent water, with, perhaps, a few salts, while certain solid ingredients are excreted by the epithelium of the tubules. The tubules, as might be expected from their complicated function, possess a somewhat complicated structure. They not only vary in width at different parts of their course (Fig. 38), but the epithelium lining these different parts is also different. From the capsule surrounding the Malpighian tuft, often known as Bowman's capsule, the tubule passes off. At first it forms a constricted portion or neck, then it becomes dilated and very tortuous, and runs more or less transversely towards the adjacent medullary ray. It is known at this point by the name of the proximal convoluted tubule. It now runs downwards and is called the spiral tubule of Schachowa. It next becomes greatly constricted, and runs in a straight course down through the boundary layer, into the papillary layer, and here, bending suddenly upon itself and forming Henle's loop, it turns back and again ascends into the cortical layer. The

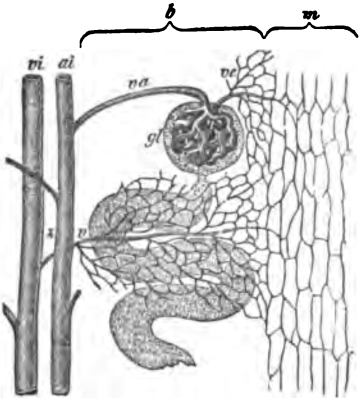

Fig. 37.—Diagram showing the relation of the Malpighian body to the uriniferous ducts and blood-vessels (after Ludwig). *m*, medullary ray or pyramid of Ferrein; *b*, labyrinth or portion of cortex with tortuous tubules; *ai*, interlobular artery; *va*, afferent vessel; *gl*, glomerulus; *ve*, efferent vessel; *zv*, venous twig; *vi*, interlobular vein.

descending part of this loop is very narrow and straight. The ascending limb of the loop is more dilated and winding, and becomes more or less spiral. As it ascends it becomes wavy, then irregular in outline (irregular tubule), and again dilated and convoluted. This second dilated or convoluted part is called the intermediary segment, or distal convoluted tubule. Beyond this the tube again becomes constricted, and joining with others, forms a collecting tube. This in its turn joins with others to form the

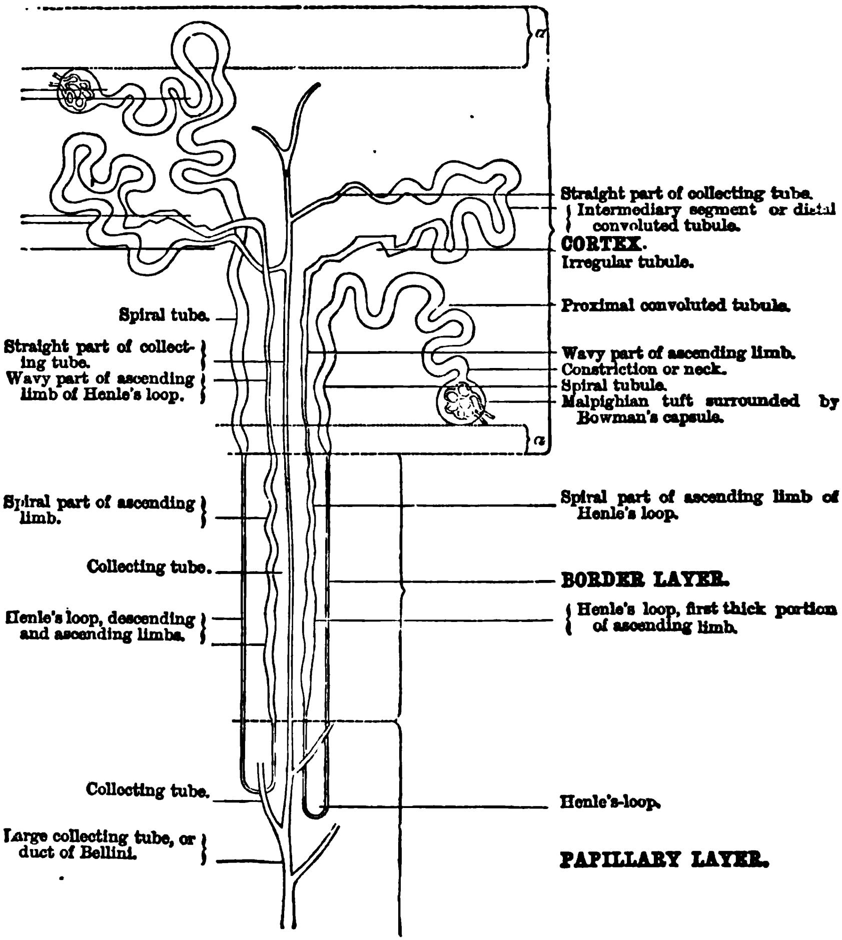
a
Straight part of collecting tube.
Intermediary segment or distal convoluted tubule.
CORTEX.
Irregular tubule.
Spiral tube.
Proximal convoluted tubule.
Straight part of collecting tube.
Wavy part of ascending limb of Henle's loop.
Wavy part of ascending limb.
Constriction or neck.
Spiral tubule.
Malpighian tuft surrounded by Bowman's capsule.
a
Spiral part of ascending limb.
Spiral part of ascending limb of Henle's loop.
Collecting tube.
BORDER LAYER.
Henle's loop, descending and ascending limbs.
Henle's loop, first thick portion of ascending limb.
Collecting tube.
Henle's-loop.
Large collecting tube, or duct of Bellini.
PAPILLARY LAYER.

Fig. 38.—Diagram of the course of the uriniferous tubes (after Klein).

large collecting tube, or tube of Bellini, which opens into the pelvis at the papilla. The epithelium lining these different parts

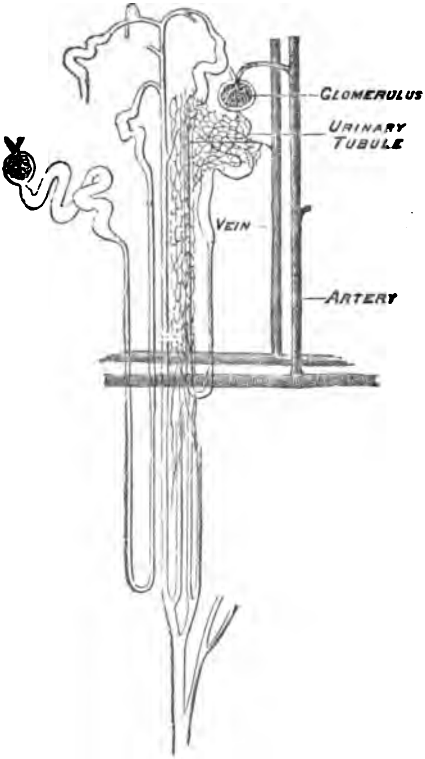

Fig. 39.—Diagram showing the relation of uriniferous tubes and blood-vessels.

is, as I have already said, varied in structure. The cells covering the glomerulus and lining Bowman's capsule are squamous, those of the proximal convoluted tubule are short polyhedral, columnar, or club-shaped. In the spiral tubule they are also polyhedral, and have a tendency to fibulation. In the descending limb of Henle's loop they are flattened, in the ascending limb polyhedral, but flattened and fibulated. In the irregular tubule they vary according to the thickness of the tube, and are polyhedral, pyramidal, or short columnar. The distal-convoluted tubule has a structure exactly like that of the proximal convoluted tubule. The collecting tubes have transparent polyhedral cells whose size varies according to that of the tubules. Around the tubules is a net-work of capillaries (Figs. 37 and 39), the blood in which plays, no doubt, a very important part in the processes of secretion which occur in the various parts of each tubule. Between the tubules there is a net-work of lymph spaces, which communicate freely with each other, as well as with the lymphatics on the surface of the kidney, and those which issue from the hilus along with the blood-vessels. Between the tubules and the vessels, also, a small amount of connective tissue is found, and a number of small nerve filaments derived from the renal plexus and the smaller splanchnic nerve accompany the final branches of the arteries.

SYMPTOMS, PATHOLOGY, AND TREATMENT OF ALBUMINURIA.[1]

('*The Practitioner*,' VOL. XV., *Nov. and Dec.*, 1876.)

A VERY large proportion of the patients that medical men in large towns are called upon to treat present symptoms of anæmia or want of blood.

They are pale and washed-out-looking, their whole appearance being apt to recall the blanched look of a washerwoman's hands, and when we examine the gums and the inside of the lips, or pull forward the lower eyelid, and look at its inner surface, we find that all the mucous membranes are paler than in health.

When we come to question the patients, we find that they complain of the very symptoms which we might *à priori* predicate from the condition of the blood. As it is frequently convenient to be able to tell the patient what he or she feels, we will run over in order the symptoms of which persons suffering from anæmia usually complain. First of all, the use of the blood is to nourish the tissues generally, and the muscles among the rest. If the blood be defective either in quantity or quality, the tissues will be insufficiently nourished, the muscles will be unable to do their ordinary work, and the patient will complain of being weak and easily fatigued.

Secondly, the blood has to act as a carrier of oxygen from the lungs to the tissues. All muscular work, all secretion from glands, in fact we may say, every process of life is a process of combustion. Whenever the supply of oxygen fails the work is lessened, and at length stopped entirely, just as the exclusion of air would extinguish the fire in a furnace, and bring to a complete stand-still the engine to which it furnishes the motor power.

Now the combustion in the body goes on at a great distance from the outer air, and it would stop for want of a sufficient supply of oxygen were it not for the hæmoglobin of the blood. The hæmoglobin is the red colouring matter of the blood, and is contained in the red corpuscles alone. When they are deficient it is deficient, and its chief function and theirs is to act as a carrier of oxygen. It takes up this gas in the lungs, carries it to the tissues, and then gives it up to them. At each breath that a man takes he saturates a quantity of the hæmoglobin in the blood-vessels of his lungs with oxygen, and then on it goes to his muscles to keep up combustion in them. If he is running, leaping, rowing, or using his muscles much in any way whatever, they must get more oxygen than when he is sitting or lying, and in order to give them as much as they need he must breathe much oftener than usual. By doing this, a healthy man can get enough oxygen to enable him to make great exertions, and if his work is only moderately hard he scarcely feels that his breathing is different from usual. But if he unfortunately happens to have a quantity of fluid in his chest, so that one lung can only expand to half the size it ought to do, he cannot take in the proper quantity of oxygen at each respiration. He is therefore obliged to breathe oftener, so as to make up for the small quantity of air that he can take in each time, and so a moderate exertion will make him puff and blow like a healthy man after a hard run.

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[1] Read before the Abernethian Society at St. Bartholomew's Hospital.

Now, exactly the same thing takes place when a person has too little hæmoglobin and red blood corpuscles as when he has too little available lung tissue. It is easy to see this. If a man has only half the quantity of hæmoglobin in his blood that he ought to have, it can only take up about half the amount of oxygen that it ought to do, and there is not much to choose between this condition and the case where only one lung is working, and thus giving only half the proper quantity of oxygen to the blood. If the blood only *takes* half the right quantity of oxygen, it is much the same as if it only *gets* half the right quantity.

Thus it is that anæmic persons are short of breath, and if they go quickly up-stairs, they puff and blow so that they cannot speak when they get to the top, and, in short, they are incapable of any great exertion.

Thus the first symptom of anæmia, not to mention the pallor, is muscular weakness; the second is shortness of breath.

The third symptom, or set of symptoms, refers to secretion. As I have already said, secretion is a process of oxidation as much and perhaps even more than muscular contraction. Ludwig[1] and Spiess found that the saliva secreted by the submaxillary gland of a dog was actually 1½° C. warmer than the blood of the carotid artery, and of course to heat the saliva in this way there must be very active combustion going on in the gland during the process of secretion. To supply the oxygen required for this combustion, the arteries of the glands are found to dilate, and torrents of bright-red oxygenated blood rush rapidly through them. Nor is this process confined to the salivary glands alone. The stomach, the pancreas, and probably also the intestines, all get a copious supply of arterial blood during the process of secretion, and although a rise of temperature indicative of active combustion has not been demonstrated to take place in them during the act of secretion, it is in the highest degree probable that these other glands resemble the salivary ones in this respect. Seeing, then, that oxidation plays such an important part in secretion, we could hardly expect that it would go on briskly, any more than that the muscles would work easily, when the blood is poor in hæmoglobin, and the supply of oxygen which it ought to convey to the glands is consequently deficient.

Now the whole process of digestion depends on secretion, and if the salivary glands and pancreas do not secrete properly, the starchy part of the food will not be rendered soluble; if the stomach does not pour out gastric juice, the albumen and fibrin will not be digested; and if the pancreas is not working, the fats will pass out unchanged. And even when these organs do their work after a fashion and succeed in digesting the food at length, yet if they secrete their appropriate juices in small quantity the food will be only slowly digested. It will then undergo partial decomposition in the intestine instead of being rapidly dissolved, and will give rise to the formation of gas in the intestines with all its attendant discomforts. The symptoms of this condition are —there is no appetite, the food lies heavy at the stomach, and there is frequent belching of gas which often brings up with it particles of undigested food or sour burning liquids. There is often nausea, sometimes retching, or vomiting. The bowels are sometimes very loose and at others very confined.

We may thus add to muscular weakness and shortness of breath a third symptom of anæmia, viz. *dyspepsia.*

Having thus found that the muscular, respiratory, and digestive functions are all impaired by anæmia, we naturally inquire how the nervous system gets along. The brain cannot work without oxygen any more than the muscles; indeed it requires a still more constant supply than they, and when we direct our attention to it we find that it enjoys no exemption from the general debility. Deficiency of motor power manifests itself in languor, listlessness, and laziness, while the sensory functions evidence their disturbance by giddiness, drowsiness, headache, weight in the head, throbbing of the arteries, neuralgic affections, and numberless odd nervous symptoms, which lead medical men who are themselves suffering from anæmia to believe that they have all sorts of mischief going on within their brain-pan, until a little quassia and iron removes their symptoms and allays their apprehensions.

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[1] Ludwig's *Physiologie*, vol. ii. p. 341.

We come lastly to the circulation, and we find that it too suffers, so that although we have put it last, one of the symptoms connected with it sometimes attracts our attention more than all the others together. This symptom is *œdema* or swelling from the presence of fluid in the cellular tissues.

How does this fluid come to be there? During life there is a constant exudation of fluid from the blood-vessels, and after this has done its work by affording nutriment to the cells of which these tissues are composed, it is again absorbed, partly by the veins and partly by the lymphatics. In health the exudation and absorption balance each other, and so there is no accumulation of fluid in the tissues; but whenever the exudation becomes too rapid, or the absorption becomes too slow, such an accumulation takes place. When it occurs in the tissues it is called œdema; when in a large lymphatic space, better known perhaps by its more common name of serous cavity, it is termed dropsy.

Now absorption has been shown by Goltz to depend very much on the vaso-motor nerves.[1] When these are acting powerfully, absorption takes place rapidly; when they are acting slightly, absorption takes place slowly.

Deficient action of these nerves also causes fluid to be poured out more rapidly from the vessels,[2] as well as to be absorbed more slowly. Thus any weakness of the vaso-motor system tends to produce œdema in a double fashion, and to such weakness we may probably ascribe the œdema we meet with in anæmia. It is quite evident that if the œdema is dependent on deficient re-absorption, we shall find it most marked in those parts where the circulation in the veins and lymphatics is most languid—*i.e.* in the feet and ankles; and this is indeed what we do find in œdema depending on venous obstruction; but when it depends on excessive exudation also, it may be found wherever the tissues are loose, as in the lower eyelid and scrotum. In health the vaso-motor nerves keep the arterioles throughout the body more or less contracted, and thus prevent the blood which the heart pumps into the aorta from running out quickly into the veins. They thus keep the arteries always well filled and fairly on the stretch, so that the heart cannot stretch them still more by emptying itself into them, without using a fair amount of force. But when the vaso-motor system gets weak, it no longer keeps the arterioles up to their work, and in consequence they occasionally dilate and let the blood through them more quickly than they ought. The arteries consequently get partially emptied; the heart can pump all the blood into them with almost no exertion, and so it sometimes seems as if it did not know what to do with its superabundant energy, and works fast and loose like the driving-wheel of a locomotive on a piece of greasy rail. Another symptom of anæmia is, therefore, *palpitation.*

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[1] Pflüger's *Archiv.*, vol. v. p. 33.

[2] Ranvier. *Recherches Expérimentales sur le Production de l'Œdcme, Comptes rendus*, 1869.

We may now at last count up on our fingers the symptoms of anæmia, not reckoning, but always bearing in mind, the pallor of the patient. We have (1) muscular weakness; (2) shortness of breath; (3) dyspepsia; (4) weakened nervous system, both sensory and motor; (5) weak circulation leading to palpitation, and œdema or dropsy.

All the varied symptoms included under these five heads may, as we have seen, be caused by anæmia, though we must not forget that some of them may be present without anæmia. For example, an individual may come complaining of dyspepsia, though a single glance at his plethoric countenance shows you that no want of blood is the cause, but rather gourmandizing and gluttony above the powers of even the most healthy stomach to sustain. But supposing we have all the symptoms included under the five heads just given, and the pale face and blanched mucous membranes leave no doubt on our minds as to the presence of anæmia, we have next to ask what is the cause of it, in order that, instead of trying to remedy one symptom by itself and another symptom by itself, we may strike at the root of the disease and remove the anæmia on which they all depend.

There are two ways in which a man may come to want money; (1) he may not get enough to supply his daily wants, either from laziness or misfortune; or (2) he may lose what he has either by being extravagant and squandering until poverty compels him to tighten his purse-strings—steadily living above his income, and thus losing his fortune by degrees; or by rashly speculating, and thus losing a great part of it at one stroke.

And just so it is with the blood. We use up some of it every day to keep our tissues in working order; and unless this loss were regularly compensated by the food we eat our blood would soon be too much reduced in quality, if not in quantity, to sustain life. For be it remembered that a proper quantity of blood will not nourish the tissues if its quality be deficient, any more than an ounce of copper will pay a man's debts when they amount to an ounce of gold. Whenever, then, this nourishment, which is daily received into the blood, is insufficient to supply the daily expenditure on the tissues, anæmia will, in a greater or less degree, be sure to follow. It does not very much matter whether the supply of food taken into the mouth is insufficient, or whether imperfect digestion prevents assimilation. Dyspepsia, then, by lessening the appetite, and rendering the digestion of such food as is consumed less perfect than it ought to be, has much the same effect as partial starvation, and is one cause of anæmia.

But anæmia we have already seen to be a cause of dyspepsia; and thus the one aiding the other they go on from bad to worse, in a vicious circle, unless something interferes to break it.

The cases of anæmia which I would liken to the spendthrift are those of chlorotic girls where the anæmia really seems to depend on some of the organs or tissues using up the blood in a way they have no right to do, and thus squandering the precious fluid without getting any good from it, and indeed without one's being able to see where it has gone, unless the deep-red colour of the urine one gets in such cases on the addition of nitric acid to it may be taken as an indication that more than a fair share of the hæmoglobin of the blood has undergone some mysterious transformation, and found too ready a way of escape through the kidneys.

Anæmia may also be a consequence of sudden and considerable losses of blood, such as those which occur in menorrhagia, or from bleeding piles, which not unfrequently drain away the vital fluid and sap the patient's strength, ere ever he be aware of the mischief which is going on.

Important as these causes of anæmia are, there is yet another no less important, and in which the drain is still more constant, although in it one may not see the blood actually leave the body while still retaining its well-known colour.

This cause to which I wish especially to direct your attention is albuminuria.

In it the blood is constantly losing one of its most important constituents, the albumin, which leaks through the kidneys along with the urine, and thus runs to waste instead of remaining in the body and ministering to its nutriment. Although the serum-albumen thus lost is not a constituent of the red blood corpuscles yet the deficiency in it seems in some way to affect them, and their numbers diminish, possibly, though we cannot say with certainty, because they cannot get the albuminous constituents of their hæmoglobin in requisite quantity. For it must be remembered that the hæmoglobin, or colouring matter of the blood, which plays such an important part in the oxygenation of the tissues, consists of an albuminous substance, globulin, and a non-albuminous substance, hæmatin. There are regulating arrangements in the body which keep all its different parts in mutual harmony and dependence on one another, so that, as St. Paul said long ago, "if one member suffer, all the members suffer with it," and if one part is starved, the other parts frequently, if not always, suffer privation with it. The serum-albumin being, then, deficient in the blood, it is not at all astonishing that the albuminous constituent of the colouring matter should also be below par.

The symptoms of albuminuria are, therefore, those of anæmia, and we often suspect the presence of the disease from the mere look of the patient before we have addressed a question to him or applied a single instrument of physical diagnosis. There is not only paleness from the general want of blood, but there is a greater tendency to œdema than in other forms of anæmia, so that the face is not only pale, but puffy, pasty, or doughy looking, with a tendency to swelling about the lower eyelids. The ankles and shins are frequently œdematous and pit on pressure, and there may also be accumulations of fluid in one or other of the serous cavities. These appearances in a patient at once arouse a suspicion of albuminuria, and we proceed to test them by examining the urine. In a state of health this secretion should be absolutely free from albumen. We detect the presence of this abnormal constituent in two ways: 1st, By boiling; and, 2nd, by adding nitric acid. On boiling urine containing albumin, coagulation takes place, and according to the quantity present we have either a faint haze giving an opalescence to the liquid, a heavy coagulum, or any intermediate condition between these two. There are some fallacies in this test, however, which require attention, for ignorance of them may lead us to imagine that there is no albumin when it is really present, or to fancy it there when the urine is completely free from it. The first fallacy is that serum-albumin forms compounds both with alkalis and acids, to which the names of alkali-albumin and acid-albumin have been given respectively. Now neither of these compounds are coagulated by heat, and although serum-albumin itself is readily coagulated by boiling, yet if acids or alkalis are present when we begin to heat it, the very warmth of the liquid, as we gradually raise its temperature, causes the albumin to combine with the acids or alkalis and form acid-albumin, or alkali-albumin. Thus it may happen that by the time we reach the temperature at which the albumin should be precipitated it is no longer present in its original condition, its combinations being already complete.

Thus, if the urine be very strongly acid, or very strongly alkaline, we may get these compounds formed, and then heat produces no coagulation, although albumin is present. We therefore ascertain the reaction of the urine by means of litmus paper before applying heat. As the tissues of the body are all alkaline, it is very unlikely that the urine will contain so much free acid as to produce acid-albumin, and indeed such a condition is almost never found except in persons who have been taking large quantities of mineral acids.[1] In such a case we would add sufficient alkali merely to neutralise the acid before we boiled the urine, but this is so rarely necessary that we generally disregard this source of error. Excessive alkalinity, however, is not so uncommon, and we very frequently have to add a few drops of acetic acid to the urine so as to render it slightly acid before boiling.

This addition of acid, however, serves a double purpose, and not only enables us to detect the albumin more certainly when it is present, but prevents us from mistaking other things for it when it is absent.

In some urines alkaline phosphates or carbonates are precipitated by heat and may be mistaken for albumin, but a drop or two of acetic or nitric acid prevents their precipitation, or if added after they have already been thrown down dissolves them again and causes the urine which they have clouded to become clear again.

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[1] Stockvis, *Sur l'Albuminuric*, p. 8.

It is thus evident that heat alone without acid is an insufficient test for albumin. Nitric acid coagulates albumin and causes a haze or coagulum just like heat, but nitric acid alone without heat is also unsatisfactory and may be deceptive. If the urine contain a large quantity of urea, the nitric acid may cause the formation of a crystalline precipitate of nitrate of urea, which is, however, but rarely mistaken for albumin. But if urates be present in large proportion, one is much more likely to fall into error, for the nitric acid drives out uric acid from its combinations with soda or potash, and free uric acid being much less soluble than urates a precipitate is formed which is much more likely than the urea one to be mistaken for albumin. A little heat now applied to the urine causes either urea or uric acid to redissolve, and the urine clouded by them to clear; but it has no effect on the haze or coagulum produced by albumin.

In testing for albumin, then, the best method of proceeding is to allow three or four drops of nitric acid to trickle down the side of the test tube containing the urine. If no haze appears we may conclude that the urine is free from albumin.[1] It won't do to pour in acid until the test tube is half full, for it is possible that if only a little albumin is present it may be converted into acid-albumin and dissolved by the concentrated acid. If a cloudiness appears we must not at once conclude that it is due to albumin, but must warm the urine over a spirit lamp. If it is really albuminous the opacity will remain, but if the cloud is due to urea or uric acid it will disappear.

So much for the symptoms of albuminuria, which are paleness and pastiness of the face, a tendency to œdema and dropsy, complaints of weakness, shortness of breath, dyspepsia, nervous symptoms, and, I may add, occasionally palpitation, associated with the presence of serum-albumin in the urine.

The next thing we have to do is to inquire how the albumin which we find in the urine gets there, and in order to do this we must take a glance at the structure of the kidney.

The function of this organ is to separate the products of tissue waste and any excess of water which may be present in the blood, but at the same time to prevent anything that is of use to the economy from passing through. When we wish to separate two substances, one of which is insoluble and the other soluble, in the laboratory, we use a filter, and we have in the kidney an apparatus for filtration. When we wish to filter rapidly we use a number of filters at once, so as to increase the surface of filtering paper, and if we are in a great hurry we help the fluid through by means of pressure, generally that of the atmosphere, as in a Bunsen's pump.

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[1] Stockvis, *Sur l'Albuminurie*, p. 4.

In the kidney we have something similar, for the renal artery inside the kidney divides into branches, which break up into knots of small vessels, thereby increasing their surface enormously; and the renal artery is extremely wide, so that there is always a considerable pressure on these little vessels compared with what there usually is on small vessels generally. And just as a filter is put in a funnel which collects and conveys away the filtrate, so these bunches of arterioles or glomeruli, as they are called, are enclosed in a little bag or capsule which collects the urine as it exudes through them. But the urine, as it filters through, contains a number of salts which may be utilized in the body, and more water than the organism can well afford to lose. Therefore, before it is excreted it passes through a long winding tube lined with epithelium and dilated at two points, while it is narrow at two others. Thus the fluid finds a difficulty in getting through rapidly, and lies for a while in the dilated parts of the tube, so that the epithelial cells which line them have plenty of time to absorb the superfluous water and the salts, which may again be utilized. But what are the cells to do with this water and salts? How are they to get rid of them? They do so by giving them up to the veins, which form a plexus all round these tubes, and absorb and convey away into the general circulation all that the cells remove from the tubules. It is thought by many, and with great probability, that the cells lining the tubules do not merely absorb from the tubules the water and salts which they give up to the veins, but that they also take from the veins various products of tissue waste, especially urea, and excrete them into the tubules. Between the tubules and veins are lymph spaces, in which both they and the arteries lie, and this fact I wish you specially to remember, as it is of great importance. We may, if we like, look on the kidney as a sac containing lymph, in which the arteries, tubules, and veins are all imbedded, though they are packed so thickly together that we hardly recollect that there is any lymph space there at all; just as when we stuff a lot of tow into a pan of water so as to fill it, we see only the fibres of the tow and forget that they are lying imbedded in water, which fills all the interstices between the fibres. This will be more evident if we look at the right-hand side of the accompanying diagram (Fig. 39, p. 305), in which the tubules, arteries, and veins, thickly crowded together as they are, may be fairly compared to the closely-packed fibres of a bundle of tow, while all around them is lymph. At the left-hand side of the diagram the capillaries have been omitted so as to show the course of the tubules more plainly. Now, ordinarily, the glomeruli do not let out any albumin, though they allow water, salts, urea, and such like crystalline products to filter out, or possibly it might be more correct to say diffuse out, seeing we have fluid on the outside as well as inside of the arterial twigs instead of air on the outside as in ordinary filtration. But filtration and diffusion seem to be merely varieties of the same process, if we accept the experiments of Moritz Traube.[1] The molecular weight of a body seems, according to him, to represent the size of a single molecule, and a body with a low molecular weight, and consequently with a small-sized molecule, will pass through the minute pores of an animal or vegetable membrane when the big molecules of a body which has a large molecular weight would stick on their way. Thus you know that Graham divided bodies into crystalloids and colloids, because crystals when dissolved generally diffuse easily, while bodies which do not crystallize hardly diffuse at all. But hæmoglobin, the colouring matter of the blood, forms beautiful crystals, and yet it does not diffuse, a fact which seems difficult to explain unless we adopt Traube's hypothesis, and then it is as plain as possible. Most crystals have a low molecular weight, but hæmoglobin has an enormous one, its formula, according to Preyer, being $C_{1200}\ H_{960}\ N_{154}\ F_2\ S_6\ O_{354}$, so that its giant molecules are simply too big to get through the pores of a membrane.

Now serum-albumin, as I have said, does not diffuse through the kidney, but white of egg does, and whenever we inject white of egg under the skin it appears again in the urine, and the same is the case if a man eats more eggs than he can digest. A single raw egg drank before a race is popularly said to give a man wind, but I have heard of a man who, when about to run a race, instead of one, drank eleven eggs, with the result that, instead of improving his wind immensely as he expected, he could not run at all. I have little doubt that if his urine had been examined albumen would have been found in it. When eggs are injected into the rectum also, part of the albumen sometimes remains undigested, but is absorbed and passes out in the urine. Another sort of albumin discovered by Bence Jones, and named after him, passes into the urine in the same way as white of egg.[1]

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[1] *Centralblatt f. d. med. Wissenschaften*, 1866, p. 97.

From these facts, judged in the light of Traube's hypothesis, it would almost seem that the molecular weight of white of egg and of Bence Jones's albumin is less than that of serum-albumin, and that they filter through while the latter is retained. But though the arterial twigs in the glomeruli may allow white of egg to pass, they do not appear ever to allow serum-albumin to exude even under the greatest pressure, unless indeed they should happen to burst altogether, and then not only the albumin, but the blood corpuscles also get out into the urine. The reason for this belief is that even when we tie the aorta below the renal arteries, and thus raise the blood pressure enormously in the glomeruli, not a particle of albumin appears except, as I have already said, it comes along with blood.[2]

But the veins are very different from the arteries in this respect, and a slight increase of the blood pressure within them is sufficient to produce albuminuria. We can easily fancy this when we take a glance again at the structure of the kidney. The tubules are surrounded by lymph, which probably exudes from the capillary net formed by the artery after leaving the glomerulus. So long as the veins are ready to absorb this lymph matters go on smoothly, but whenever the pressure inside the venous radicles is increased by any obstruction in front, the case becomes very different. The lymph cannot get back into the arteries because the pressure in them is too great, it cannot get into the veins for a similar reason, the lymphatics do not seem to be able to carry it all off, and the easiest way of escape is into the tubuli uriniferi, and so out it goes, carrying with it the albumin it contains, and thus producing albuminuria.

Thus any obstruction to the return of venous blood from the kidneys is one of the causes most certain to produce albuminuria. Let us, therefore, follow the course of the renal veins so as to see where any obstruction is likely to occur. First, there may be a tumour pressing on the renal veins themselves or on the vena cava, and this at once reminds us that a pregnant uterus may be a temporary cause of albuminuria. But except from this physiological tumour, we find comparatively few instances of pressure on the veins, and, omitting tumours of the liver, the first cause of obstruction we come to is the heart. Whenever the right side of the heart becomes dilated, and the tricuspid valve incompetent, each cardiac systole drives some of the blood back into the veins, and thus leads to serious congestion of the kidneys. A common cause of albuminuria, therefore, is heart disease.

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[1] The only practical application to which a knowledge of this kind of albuminuria may be turned is that, if you are feeding weak patients with enemata of eggs, the appearance of albumen in the urine may not be at all an indication of kidney-disease, and researches on this point would certainly be of service to the profession.

[2] Stockvis, *Sur l'Albuminurie.*

But tricuspid disease is rare as a primary lesion, and incompetence of this valve is generally secondary to affections of some of the other cardiac orifices, such as the mitral or aortic.

As it is more common in cases of mitral disease, we will consider this first. You will often find patients who have loud mitral murmurs without a trace of albuminuria. So long as the right side of the heart is tolerably strong, it can hold its ground even against the increased pressure it has to overcome, and it is not until it begins to get weak that it relaxes and dilates before the internal pressure until the tricuspid valves no longer suffice to close the enlarged orifice, and regurgitation consequently takes place. The same is the case in aortic disease, only the pressure there has first to overcome the left ventricle and dilate the mitral orifice before it can begin to perform the same operation on the right ventricle and tricuspid valve. Thus it is that venous congestion and albuminuria do not so readily follow aortic as mitral disease.

But any obstruction to the flow of blood through the lungs will produce more or less congestion of the kidneys, and thus lead to albuminuria, although it would appear that the obstruction must be pretty considerable before this symptom appears. Thus we do not find albumen in the urine in every case of pulmonary derangement; but Dr. Parkes has found it temporarily present in considerable quantities in acute pneumonia.[1] In cholera too, where, as is usually believed, the pulmonary vessels contract spasmodically, so as to prevent the blood from flowing through them, we

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[1] I am inclined to think, however, that there must be a weakening of the vaso-motor nerves to the renal veins as well as obstruction to the circulation in the lungs, for I have seen a case of great dilatation of the right ventricle and tricuspid incompetence where no albumen appeared in the urine, notwithstanding the great pressure to which the blood in the renal veins must have been subjected by the backward flow from the ventricle.

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ARSENIC IN ALBUMINURIA.[1]

('*The Practitioner*' *for June* 1877.)

ALBUMINURIA has been divided by Gubler into two sorts, false and true. False albuminuria, according to him, consists in the admixture of pus, or of blood, with the urine. I, however, am inclined to extend the significance of the term false albuminuria, and include in it all those cases where an albuminous body other than serum-albumin occurs in the urine. False albuminuria would thus include not only those cases where pus or blood occurs in the urine, but those in which the so-called Bence Jones's albumin, egg-albumin,[2] and possibly paraglobulin make their appearance. Under ordinary circumstances albuminous bodies do not diffuse through animal membranes, but it has been shown by Bernard, Pavy, Stockvis, and others that albumin of eggs will pass out through the kidneys, while the albumin of blood does not do so under similar conditions. Bernard, it is true, believed that serum-albumin passed through the kidneys in much the same way as egg-albumin when it was injected into the circulation; but Stockvis, having repeated Bernard's experiments, showed that the serum-albumin only appeared in the urine when the experiments had been imperfectly performed, and the injection had interfered with the proper circulation of the blood in the veins, thus causing venous congestion of the kidney itself. Egg-albumin and Bence Jones's albumin he found to be excreted by the kidneys, not only when they were injected into the blood, but when they were introduced under the skin or in large quantities into the rectum.[3] In the two latter cases the interference with the circulation was obviously not the cause of the appearance of albuminuria. It seems curious that one sort of albumin should pass through the vessels of the kidney, while another should be retained, and the only feasible explanation of it seems to be that the molecule of the different albumins varies in size. For the passage of substances in solution through membranes has been shown by Moritz Traube to resemble very much the passage of powdered matters through a sieve.[1] When the particles of the substance are too large to pass through the meshes of the sieve they are retained, but when they are too small they pass through. Thus almost all crystalline substances readily diffuse through animal membranes, and Graham divided bodies, according to their diffusibility, into crystalloids and colloids. But there is one marked exception to the rule that crystalline bodies diffuse, and this is the colouring matter of the blood, hæmoglobin. This substance differs from most other crystalline bodies in possessing a very high molecular weight, and the molecule is therefore, in all probability, very large. Traube's hypothesis at once explains this curious exception to Graham's law, and renders it probable that hæmoglobin does not diffuse simply because its molecule is too large to pass through the pores of ordinary membranes. We may apply this hypothesis to explain the appearance of albumin in urine after the injection of white of egg under the skin, and its absence after a similar injection of serum-albumin. If we suppose that the molecule of egg-albumin is smaller than that of serum-albumin, we can readily understand that after being absorbed from the subcutaneous cellular tissue, and carried by the blood to the kidneys, it may pass through the vessels into the urine, while the larger molecule of serum-albumin will be retained.

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[1] Read before the Medical Society of London.

[2] To distinguish between the entire white of egg or *albumen* and *egg-albumin*, which is its chief but not its only constituent, the former is spelt with an *e* and the

The facts regarding false albuminuria are, that egg-albumin, and other albumins such as Bence Jones's albumin, pass out through the vessels of the kidney without any alteration in the structure of the organ, or interference with the circulation of the blood through it, while serum-albumin will not pass out.

True albuminuria consists in the passage of serum-albumin, which is a normal constituent of the blood, into the urine. It depends either upon alterations in the structure of the kidney, or interference with the circulation through it, or upon both. It has been supposed that great increase in the pressure of blood within the renal glomeruli will cause albumin to appear in the urine, but the experiments of Stockvis appear to disprove this supposition.[1] He found that no increase in the arterial pressure, either generally throughout the body, or in the kidney alone, would produce it. He raised the general pressure by compressing the aorta and other large arteries, and he raised the pressure in the kidney itself by dividing the vaso-motor nerves of the organ so that the renal arteries dilated and allowed much more blood than usual to pour into the kidney. In neither case did he find any albuminuria, but the result was very different when he interfered at all with the venous circulation of the kidney. An obstruction to the return of the blood through the renal veins was sufficient to cause albuminuria. Thus it came on when the renal veins were tied, when the vena cava was plugged, or when the movements of the heart were interfered with by a small caoutchouc ball passed down the jugular vein into the right ventricle, or when quantities of fluid were injected quickly into the jugular vein. It is to the venous obstruction caused by such injections that Stockvis attributes the albuminuria observed by Bernard after the injection of ordinary serum into the vein.

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[1] *Centralblatt d. med. Wiss.* 1866, p. 97.

Pathologically we find albuminuria occurring from venous congestion, in cases of thrombosis of the vena cava, in mitral disease, and in emphysema whenever the right ventricle begins to yield and allow regurgitation into the veins. There is, however, another cause of venous congestion which at first sight would appear likely to have an effect exactly opposite to that which it actually produces. This is obstruction to the flow of blood through the renal artery. When this artery is ligatured, or when the circulation through the kidney is stopped by the action of drugs upon it, we find albumin appearing in the urine after the secretion has been re-established. One would expect to find the kidney pale, and anæmic after ligature of the artery, but, on performing this experiment, Brown-Séquard found that the kidney was deeply congested, the reason of this being that the veins had lost their contractile power, and the blood had consequently flowed backwards into them from the larger venous trunks. We may indeed, form a good conception of the condition by noticing the difference between the paleness of the hands when they are first exposed to cold and the congested blueness which follows a longer exposure. Venous congestion then is the cause of albuminuria depending on alterations in the circulation. In embolism of the kidney the result as respects a part of the organ will be the same as what we find in the whole organ after ligature of the renal artery, and the albuminuria depending upon embolism may be explained in the same way.

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[1] Stockvis, *Sur l'Albuminurie* and *Quelques Mots à propos de la Brochure de M. le Professeur Correnti relative à l'Albuminurie. Journ. publié p. l. Soc. Roy. d. Sciences med. et nat. de Bruxelles*, Reprint.

The second cause of true albuminuria is alteration in the structure of the kidney, and these alterations may affect the vessels and tubules or the connective tissue stroma in the which they are embedded. In the waxy kidney the vessels are affected and the structure of their walls is changed. It seems not improbable that the altered structure of the vessels may permit the serum-albumin to transude through them in somewhat the same way as the vessels in their normal condition permit the transudation of egg-albumin. In desquamative nephritis we may suppose that the albumin finds its way into the uriniferous tubules, because the epithelial lining which might have prevented its passage has been more or less removed. Even in cases where the albuminuria depends upon organic disease of the kidney, the quantity of albumin present in the urine varies with the condition of the circulation. As a rule it is less during the night and greater during the day. We find too, generally, that a relation subsists between the quantity of urine and the proportion of albumen present in it. When the urine is copious the proportion of albumin is less; when the urine is scanty albumin is usually increased. Now it has been shown by Ludwig and Max Hermann that the quantity of urine increases with the pressure of blood in the renal glomeruli, so that, other things being equal, contraction of the arterioles just at their exit from the Malpighian capsules will increase the pressure in the glomeruli, and augment the secretion of urine. At the same time their partial contraction will probably diminish the pressure in the capillaries, will probably lessen the quantity of the lymph exuding from them into the connective tissue, and will thus lessen the leakage of albumin into the uriniferous tubules. Probably this is the reason why the albumin is usually diminished when the urine is increased, but at any rate the fact is that increased secretion does indicate increased pressure in the glomeruli, and increased secretion is usually, though not always, associated with diminution in the albumin.

I will now relate the case which I wish to bring before you, and will afterwards return to the bearing of what I have already said upon its pathology.

R. A., aged 33, analytical chemist. Short, slight, fair-haired, sallow complexion, thin. With the exception of being liable to headaches after exertion, he was apparently healthy until ten years ago. He then noticed a tendency to become very easily tired after any exertion. About a year after this (1868) he wished to insure his life, but was rejected on account of the medical officer of the insurance company having discovered albumin in his urine. He then consulted two medical men, who gave him strychnine in doses of about $\frac{1}{30}$th of a grain. This immediately stopped the albumin, but brought on violent headaches and sickness. The albumin at this early stage was only present during the summer months. It came on with work and disappeared with rest. In the winter it was absent, except during one or two severe frosts.

In the following summer it returned in large quantities, and he was advised by his medical man to go to the seaside (Margate and Ramsgate) for the three hot months, to take hot sea-baths, and to abstain from all exertion.

Though the albumen ceased, the patient's strength diminished very much. On his return to London the weather was cooler and he rapidly improved, so as to be able to return to work. In 1870 the albumen returned more persistently, so he was again recommended by a medical man to take a sea-voyage. He went to the Cape of Good Hope; leaving in June and arriving in November, very little, if at all, the better for the trip. This might be due to his ignorance of the care required in selecting the proper food. He stayed six weeks at the Cape, then came back. On his return he tried pancreatic emulsion, and for two or three days it was very successful and stopped the albumen, but after that time it brought it on worse than ever. He then tried the skim-milk treatment for three months. It was very successful at first, but he lost weight rapidly, and the albumin gradually reappeared during the last two weeks of the treatment. On discontinuing it the albumin returned.

In 1872 he was again recommended to take another and longer voyage, and take care of his diet on the way and after his arrival. He had now found that fatty food always brought on albumin, and that meat taken in the morning had a similar effect, but he could take meat with impunity for supper. He now went to Australia and New Zealand for nearly three years, leaving in October 1872, and returning in June 1875. During the greater part of this time phosphates were very abundant, and although albumin was generally completely absent, it came on whenever he exerted himself much. His strength also did not increase much. On one occasion he took a prescription containing quinine and phosphoric acid, which almost immediately caused albumin to appear in considerable quantities, and it was some time before it again disappeared. After his return in June 1875, he still remained *in statu quo.*

I saw him for the first time in January 1876. No œdema; the heart and lungs were healthy; liver normal; appetite poor; subject to acidity and headache. On inquiry I found that the albuminuria was brought on by exertion either mental or bodily in the morning, by fats such as butter, or by meat for breakfast. After midday he could do work, and could take fat and meat without bringing on the albumin. The quantity of albumin was always greatest when the urine was scanty, and least when the urine was abundant. When he engaged in his work during the forenoon albumin did not come on immediately after breakfast, but began to appear about eleven and remained until about two. When he did not work the albumin did not come on at all. He suffered much from acidity, especially in the morning. The remarkable fact that meat and fats caused albumin to appear, and that by rigid adherence to a farinaceous diet he could completely get rid of the albumin, led me to think that his albuminuria might be connected with imperfect digestion, and I accordingly gave him nitro-muriatic acid before meals. This lessened the acidity, and diminished, but did not completely remove, the albumin, so that I supposed the kidneys to be also in fault.

The quantity of albumin, as I have already mentioned, was always greatest when the urine was scanty, and least when the urine was abundant. This seemed to indicate to me that the albumin came either from the venous radicals in the kidney, or else from the lymphatic spaces in the connective tissue. I therefore attempted to act upon the arterioles of the glomeruli, and increase the secretion of urine by means of digitalis. The experiments made by Mr. Power and myself had shown us that this drug has a special action upon the vessels of the kidney, and, by giving it in small doses, I expected to contract the arterioles of the glomeruli, and thus while increasing the urine to diminish the pressure in the capillaries and veins, and lessen or remove the albumen. I intended, in fact, to produce by the drug the condition in which the patient had already found there was less albumen.

Two drachms of the infusion three times a day diminished the albumin, but lowered the action of the heart and interfered with digestion. After reducing the dose and finding that still the digitalis disagreed, I stopped it after it had been taken for a fortnight.

There was no history of syphilis, but thinking that the alterative action of mercury might be beneficial, I tried small doses of Hydrarg. c. Creta, but without any beneficial result. I next tried quinine and sulphuric acid, but this brought the albumin in large quantities into the urine, doubled it in fact, within twenty-four hours, just as it had done before.

As he had found benefit from pancreatic emulsion for a day or two on a former occasion, I advised him to try it again, and to stop it after two days so as to prevent the increase of albumin which its continued use had previously induced. The first dose, however, made him worse, and it was accordingly stopped. My attempts to act upon the vessels of the kidney having been futile, and my random treatment with mercury and quinine having also been useless, I determined to try to act upon the secreting structures of the kidney, and accordingly gave arsenic, which has a considerable action upon tissue change, and also appears to possess a special affinity for epithelial structures.

The patient accordingly took 3 ♏ of Fowler's solution at meal-times. Almost at once the albumin disappeared, and the patient was able to do much more work than usual without bringing it back. After giving this for a while I thought that as phosphorus is nearly allied to arsenic the hypophosphites might have a similar action, and accordingly gave him 5 grs. of hypophosphite of soda three times a day. This disagreed with his stomach and increased the albumin. He then returned to Fowler's solution again, and the albumin disappeared. On stopping the medicine the albumin came back, but the liquor sodæ arseniatis stopped it.

On again thinking over the pathology of the case it seemed to me probable that the albumin was derived in great measure, from the intestinal canal, and was due to imperfect digestion of albuminous substances which were absorbed from the intestine, and excreted in the urine in much the same way as white of egg would have been if the person had swallowed several raw eggs at once. As the pancreatic juice first converts coagulated albumen into a soluble form before finally digesting it, it seemed probable that imperfect pancreatic digestion was the cause of the albuminuria. The failure of the pancreatic emulsion to do good might have been due to the fat causing acidity of the stomach. The chyme being too acid would prevent the pancreatic juice from acting, and would thus make matters worse. I therefore gave pancreatine without the fat, so as to increase the pancreatic digestion without increasing the acidity of the stomach, and this has stopped the albumen also. He has, however, only been taking this for a short time, so that I do not know what the result will ultimately be.

I am inclined to regard the case I have described as due at least in part to imperfect digestion. I am uncertain whether the kidneys have anything to do with it or not. There is no history of nephritis, and the close connection between the digestion which is weak in the forenoon and stronger in the afternoon, the acidity of stomach, and albumin in the forenoon, and the want of these in the evening, seem to point to digestion as the chief cause of the albuminuria. I have not seen any casts, but I have not examined the urine frequently for them. The albuminous body which appears in the urine is probably not serum-albumin, because it only coagulates between 175° and 180° F., while the albumin in a case of chronic Bright's disease which I tested for the purpose of comparison coagulated at 140° F. The point of coagulation varies somewhat according to the amount of urea and uric acid present in the urine, but this variation will hardly account for the difference of more than 30° F. between the coagulating points of the albumen in these two urines.

The points which I wish especially to bring forward are:—1. The intermittence of the albumin and its connection with the digestion; 2. The absorption of albuminous matters from the intestine as a cause of albuminuria—a cause recognized indeed in several text-books, but often ignored in practice; 3. The utility of arsenic as shown in this case; 4. The possible use of pancreatine; 5. The effect of quinine in increasing the albumin.

ON THE PATHOLOGY OF DROPSY.

('*The Practitioner,*' VOL. XXXI., *Sept.* 1883.)

DROPSY is an accumulation of fluid in the lymph spaces. These lymph spaces may either be *small*, as in the subcutaneous cellular tissue, and in the substance of organs; or they may be *large*, as in so-called serous cavities, the peritoneum, pericardium, pleura, &c.

In the normal condition, these lymph spaces are only moistened with lymph, whereas in dropsy they may contain it in great quantities.

The question before us, viz. the pathology of dropsy, is simply: How has the lymph come to accumulate in these lymph spaces? Supposing that we have a cistern furnished below with two exit pipes which together are much larger than the supply, it will never become full, although the supply pipe should be running night and day (*vide* Fig. 40). The water rushing into it may wet its sides, but will do nothing more. If we close the exit pipes completely, however, the cistern will soon fill, and, if we close them only partially, the rapidity with which it fills will depend upon the extent to which we close the exit pipes and open the supply pipe, or in other words, it will depend upon the relation between the quantity running in and the quantity running out in a given time. This is exactly what we find in the case of the lymph spaces: these are the cisterns, the arteries and capillaries are the supply pipes, the veins and lymphatic vessels are the exit pipes. In health the lymph spaces are merely moistened with lymph, because, although, constant or nearly constant exudation of lymph is taking place into them from the capillaries, it is at once carried away by the venous radicles and by the lymphatic vessels. In the illustration just given, I have spoken of the cistern as having two exit pipes, which together are much larger than the supply pipe, but I might have spoken of them as being of unequal size, and of one of them alone being much larger than the supply pipe, although the other may not be so. For not only can the venous radicles and lymphatics together carry away all the lymph which is poured out into the lymph spaces; the venous radicles alone are sufficient for this purpose, so that even when the flow of lymph is entirely stopped by ligature of the lymphatics, no accumulation of fluid in lymph spaces may occur.[1] The lymphatics also may to a great extent remove the fluid from the lymph spaces when the veins are obstructed. Thus, as Ranvier and Cohnheim have observed in the dog, and as I have found in the cat, ligature of the inferior vena cava may sometimes produce no œdema whatever in the limbs. This is supposed by Cohnheim to be due chiefly to the establishment of collateral venous circulation.

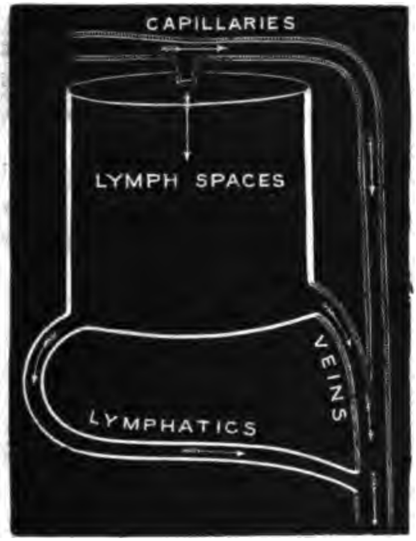

Fig. 40.—Diagram of the relations of the lymph spaces, and vessels.

But on this point I do not feel disposed entirely to agree with him, inasmuch as the veins of the surface in my observations were not dilated to the extent that one would have imagined, and I am inclined rather to believe that the prevention of œdema was due in a great measure to increased action of the lymphatics.

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[1] Cohnheim's *Pathology*, second edition, vol. i. p. 485.

Ligature of the veins at once increases the lymphatic stream, as seen in experiments upon animals. When a cannula is inserted into a lymphatic vessel in a dog, the lymph flows in small quantities in slowly succeeding drops with long intervals between. But when the chief vein of the district from which the lymph is supplied is ligatured the lymph flows much more quickly. This may be due partly to the quantity poured out from the capillaries being increased in consequence of the ligature of the vein, but I think we can hardly imagine that it is not in a great measure due also simply to the lymph, which would have been poured out in any case, passing away by the lymphatics when it could no longer be taken up by the veins. It is probable that the proportion of lymph which is removed from the lymph spaces by the veins and lymphatics varies in different individuals.

Ludwig noticed that strong, short-haired dogs yield much lymph. Now if we pat a long- and a short-haired dog we are at once struck with the difference in the feeling of the muscles. In short-haired dogs the muscles are usually hard and well defined, feeling like solid lumps under the skin. In long-haired dogs on the contrary they are soft. We notice similar differences in men, some men have very hard muscles, others very soft. This difference does not appear to affect the muscular power, because it has been found that some of the strongest men are those with soft muscles; and Kühne has shown that the contractile substance of muscle may be regarded as semifluid. The difference between the two sets of muscles lies, not in the muscular substance, but in the fascia by which it is surrounded. In some it appears to be much more developed than in others, and where it is thick it gives to the muscle a feeling of hardness. Now this fascia is a pumping arrangement (*vide* Fig. 41) by which the lymph is drawn out of the muscle and is passed onwards into the lymphatics. It consists of two layers, between which are lymph spaces ending in lymphatic vessels. Each time that the muscle contracts, the inner layer is pressed against the outer and forces the fluid onwards into the lymphatic vessel. Each time that the muscle relaxes, the inner layer tends to fall away from the outer, and thus the lymph from the muscle readily finds its way into it. In the very act of muscular contraction, then, the products of waste are washed out of it by the fresh lymph which flows through it.

This difference in the development of the muscular fascia appears to me, although upon this point I should like to speak with great reservation, to coincide with differences in the tendencies to *muscular* as distinguished from *articular* rheumatism. Where the muscles are soft from thinness of the fascia, it has appeared to me that the tendency to muscular rheumatism is greater, whereas persons with hard muscles and firm fasciæ have appeared to me to have a greater tendency to articular rheumatism. This is what one might expect, because, if by over-exertion irritant products of waste should be formed in the muscle, they will tend rather to remain there when the fascia is soft, and give rise to muscular pain; while in those whose fascia is hard, they will be removed from the muscle, but may possibly give rise to inflammation in the joints. This point is, I think, worthy of further attention; and careful observations on it might give us valuable data in regard to the true origin of rheumatism.

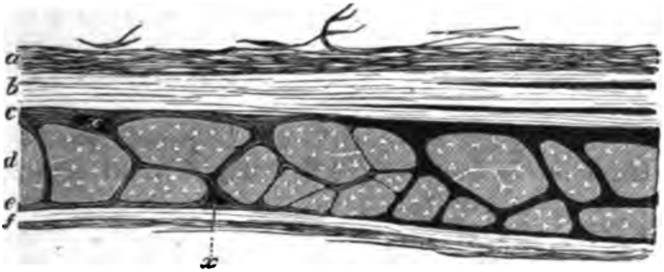

Fig. 41.—Injected lymph spaces from the *fascia lata* of the dog, after Ludwig and Schweigger-Seidel, *Lymphgefässe der Fascien und Sehnen.* The injected spaces are black in the figure.

In the case of the large serous cavities also, we have other pumping arrangements. In the central tendon of the diaphragm (*vide* Fig. 42) we have two layers which are alternately pressed together and separated by the movements of respiration, so that they pump the lymph from the peritoneal cavity in much the same

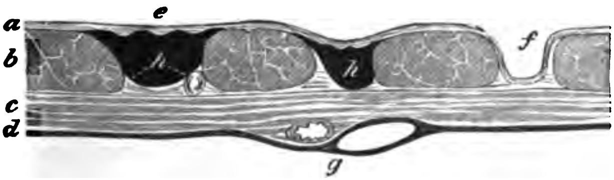

Fig. 42.—Section of central tendon of the diaphragm. The injected lymph spaces, *h* and *h*, are black. At *f* the walls of the space are collapsed. After Ludwig and Schweigger-Seidel, *Lymphgefässe der Fascien und Sehnen.*

way as the fasciæ remove it from the muscles. This is well seen by connecting the trachea of a dead rabbit with an apparatus for artificial respiration, removing the lower part of the body and hanging the thorax up with the head downwards. A solution of Prussian blue or other injecting fluid is then poured over the lower surface of the diaphragm, and the apparatus for artificial respiration set in motion. Before long the Prussian blue is pumped into the lymph spaces of the diaphragm, which then exhibit a beautiful blue network.

Similar conditions to those in the diaphragm and muscles are to be found in the costal pleura (*vide* Fig. 43). Besides these pumping arrangements in the muscles and in the serous cavities by which the flow of lymph is accelerated, actual rythmical pulsation has been observed in the lymphatics and the mesentery of guinea-pigs, but has not been found in other mammals or man.

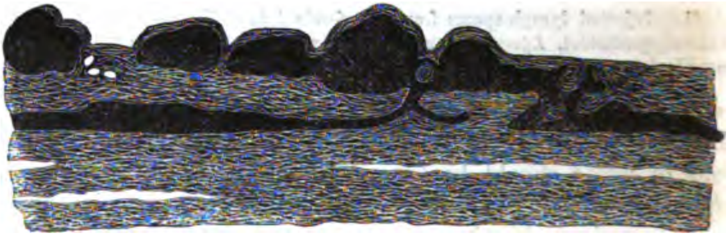

Fig. 43.—Section of pleura. The lymph spaces appear black in the figure. After Ludwig and Dybkowsky. Ludwig's *Arbeiten*, 1866.

We find, however, that there are other conditions which aid the flow of lymph. This flow naturally depends upon the difference of pressure at the two ends of the vessels, and it will be increased by anything raising its pressure in the tissues, or anything accelerating its exit from the lymphatics into the veins. Two things which diminish the pressure in the veins and aid the flow of lymph into them, are the inspiratory action of the thorax and the diastolic suction of the heart. The effect of the inspiratory action of the thorax is readily seen when one tries to blow up a fire, for the violent respiratory exertions there required appear to pump either the blood or lymph from the brain and by reducing the pressure to cause giddiness.

When these two things are imperfect, *e. g.* when the right side of the heart is incompletely emptied, and still more when there is tricuspid regurgitation, so that the veins are full, a marked hindrance will be presented to the flow of lymph. The flow will also be diminished by emphysema, in which, the chest being already barrel-shaped and incapable of much further expansion, the inspiratory suction will be diminished.

To recapitulate shortly the conditions which cause the flow of lymph, we may say its flow depends upon the difference of pressure between the two ends of the lymphatic vessels. It is increased by the pressure being raised in the tissues and lowered in the vena cava, and it is retarded by opposite conditions. Where the relations of the tissues are such that it might accumulate unduly in the lymphatic spaces, as in the muscles or the serous cavities, there are arrangements for pumping it out of those spaces and driving it into the lymphatics, so that it enters the peripheral extremities under pressure. The conditions which will interfere with the flow of lymph are: (*a*) want of muscular action; (*b*) want of inspiratory action of the thorax; (*c*) diminution of the diastolic suction of the heart, and (*d*) positive pressure in the veins.

We now come to consider the part taken by the veins in removing lymph from the lymph spaces. This, as I have already said, appears to be very great, much greater than that of the lymphatics, for when a cannula is placed in a lymphatic vessel the flow, as I have already said, is slow, but if the vein of the district be tied, the flow becomes increased to an extent far more than double what it originally was. The objection may be raised that this great increase is not merely due to the absorption which would usually have taken place from the lymphatic spaces into the veins having been arrested by the ligature, but that it is really due to the exudation of lymph from the capillary blood-vessels into the spaces being greatly increased.

It is, I should think, probable that both of these factors take part in the increase, although it may be rather hard to say precisely how far the increased quantity of lymph which flows from the lymphatics after ligature of a vein is due to increased transudation or diminished absorption.

There is, however, a point which seems to indicate not only that the veins have much absorptive power, but that they tend to reabsorb especially the watery constituents of the lymph, for œdematous lymph contains only from 2 to 3 per cent. of solids, while the lymph which flows from a vessel when the veins are open contains from 4 to 5 per cent. This difference of composition appears to me to point strongly to reabsorption of water from the lymph by the venous radicles, while the solids tend to find their way onwards through the lymphatics.

The flow of blood in the veins, like that of the lymph, depends upon difference of pressure in the peripheral and central ends of the vessels. In the upper part of the body this is aided by gravity, but in the lower parts it is counteracted by gravity. The weight of the longer column of blood in the veins of the body and leg would, to a great extent, prevent the circulation in the veins of the feet were it not aided by muscular action, which presses it onward in much the same way as it does the lymph; and how powerfully muscular action does so has been known for centuries to every barber, who provided his patient with a pole to grasp before letting blood from the arm.

It is aided also to a certain extent by the respiratory action of the thorax and the diastolic relaxation (?) of the heart. In saying "diastolic relaxation" of the heart, I have followed Cohnheim in the recent edition of his *Lectures on General Pathology*, but I am not quite certain that it would not be more correct to say the "systole" of the heart, because, as Brücke has pointed out,[1] the pericardium may be looked upon as a sort of bell-jar, the walls of which, though elastic, are kept more or less rigidly in position by the apposition of their outer surface to the lungs. Each time that the ventricle contracts and drives the blood into the aorta, it tends to cause a vacuum in the pericardial space, and thus tends to draw the blood from the venæ cavæ into the auricle.

The conditions which interfere with the flow of blood in the veins are then: (*a*) want of muscular action, (*b*) want of movement in the thorax, and (*c*) feeble action of the heart, no matter whether we look upon the systole or diastole as being the active power in sucking the blood onwards from the veins.

More important still as causes of complete arrest in a vein are (*d*) pressure upon it from without or (*e*) plugging within.

We have now considered what we termed at first the two exit pipes of the cistern, the veins and the lymphatics. Not only the two together, but either the one or the other separately, appears in the normal condition to be able to remove the lymph which is poured out into the tissues from the blood-vessels, and thus to prevent any accumulation from taking place.

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[1] I quote from a lecture I heard him deliver to his class in Vienna in the winter session, 1867-68.

Dropsy then does not occur except we have increased outflow of lymph into the tissues in addition to an interference with its removal by the veins or lymphatics.

We have now to consider the conditions which affect the supply pipe in the illustration with which we commenced, or, in other words, the conditions which increase and diminish the exudation of lymph from the capillaries into the lymph spaces. The first of these is increased supply of blood from dilatation of the arteries supplying a part.

I have already mentioned that, in Ranvier's experiment of tying the vena cava in a dog, the mere stoppage of the venous circulation does not always produce œdema of the legs, the lymph which is exuded from the capillaries being removed either by collateral venous circulation or by the lymphatics. The case, however, is usually different when, in addition to the ligature of the vena cava, the sciatic nerve is divided on one side. In consequence of the division the vessels dilate, more blood pours into the limb, more lymph is exuded into the tissues, and the limb with a divided nerve swells up enormously, while the other remains of its normal size, although the venous circulation is equally arrested in

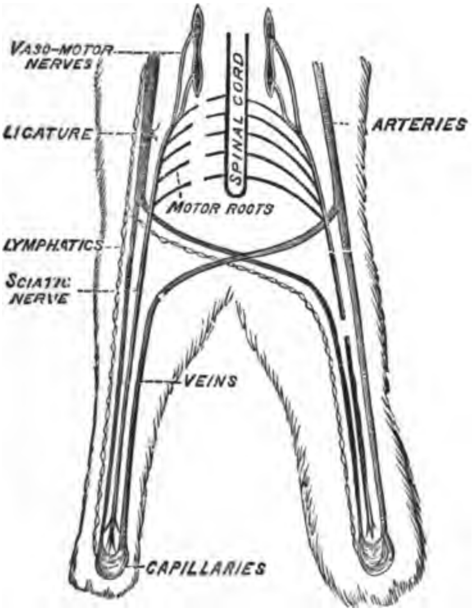

Fig. 44.—Diagram of Ranvier's experiment.

both. That this accumulation of lymph in the tissues of the leg is due to paralysis of the vaso-motor and not of the motor nerves of the limb is proved by dividing on the one side the motor roots of the sciatic and on the other the vaso-motor roots. When the sciatic trunk is divided, there is of course both a vaso-motor and motor paralysis in the limb, because the vaso-motor and motor nerves have been alike divided, and we get the œdema therefore coinciding with the paralysis in the limb; but when we get the motor roots of the sciatic divided and the vaso-motor intact we no longer have the paralysis and the œdema coinciding. The limb on that side where the motor roots have been divided is paralysed, but, the vaso-motor roots being intact, it retains its normal size. On the other side, where the vaso-motor roots are divided while the motor roots are intact, the power of motion is retained, but the limb becomes œdematous. The supply of lymph to the tissues is evidently so much increased by division of the vaso-motor nerves and consequent dilatation of the arteries, that the partially obstructed efferent vessels, veins and lymphatics, can no longer carry the lymph away, and œdema occurs. Sometimes a very slight obstruction is sufficient to produce œdema when there is vaso-motor weakness. This one may sometimes observe in one's own hands. Usually we may walk about for a whole day without feeling the least tendency to swelling in the hands, but every now and again, in a hot sultry day, when there appears to be thunder in the air and we feel limp and languid, we may notice that, after walking about for a while with the hands hanging by the side, the fingers swell to a certain extent, and there may be not only difficulty in drawing on one's gloves, but the fingers may be so distinctly swollen as to be slightly stiff in trying to bend them. Here we have not complete vaso-motor paralysis, but only paresis from the effect of the atmospheric conditions on the vaso-motor nerves, yet the consequence is that the exudation of lymph being increased the slight interference with venous and lymphatic return, caused by the position of the limbs, and aided perhaps by a slight pressure of the clothing, is sufficient to produce œdema.

This, at least, would be the explanation if we were to consider increased exudation of lymph from the blood-vessels as due only to dilatation of the arteries and interference with venous or lymphatic flow. As we shall see shortly, however, there is probably another factor, viz. changes in the capillaries themselves.

As a contrast to the ready production of œdema in the arm by simple dependent position, aided perhaps by a slight constriction of the clothes and by atmospheric influences, we may take the difficulty with which it occurs under certain experimental conditions.

Frequently, as Ranvier has shown, ligature of the vena cava with accompanying section of the vaso-motor nerves of a limb will cause great œdema; but this is not always the case. For Cohnheim has observed in dogs, and I have myself found a number of years ago in the cat, that simultaneous ligature of the vena cava and section of the sciatic does not always produce œdema. I was very much struck by this in one experiment which I made, for in it, although the vena cava was tied and the sciatic divided in one leg, I could notice almost no increase in the size of either limb. At the same time, as I have already mentioned, the veins on the surface of the limb where the sciatic had been divided were not much swollen, so that I am inclined to believe that a great part of the lymph effused from the capillaries was removed by the lymphatics.

The readiness with which œdema sometimes occurs with very slight alterations in the circulation, and at other times does not occur although the alterations in the circulation are very great, shows us that there are other factors of very great importance. These factors are the condition of the blood and the state of nutrition of the capillary vessels. It is possible that those two conditions really resolve themselves to a great extent, if not entirely, into one, and the main factor is the condition of the capillary vessels. This must necessarily depend to a considerable extent on the condition of the blood. It would, however, be going too far to exclude the condition of the blood from direct influence on the transudation of lymph, and allow it only an indirect action through its effect on the walls of the capillary vessels.

There can, I think, be little doubt that the quality of the blood itself alters the quantity and quality of the lymph exuded, just as differences in the quality of the fluid that you pour upon a filter will affect the quantity and character of the filtrate. But in filtering we find that with many fluids the filter will allow filtration to go on for a length of time, while with others it is speedily choked and allows neither fluid nor solid to pass. In the process of filtration the filter becomes altered, and thus the quantity and quality of the filtrate depend not only on the condition of the filter as originally used, but on the quantity and quality of the fluid to be filtered, and also on the changes which the filter undergoes during the process of filtration.

One of the most ordinary forms of dropsy is the slight œdema which we notice in the legs of persons suffering from anæmia. There may be no cardiac disease, the lungs may be quite healthy, there may not be the slightest interference with the flow of blood, either through the lymphatics or veins, and yet we find dropsy occurring in the legs; the lymph passing out in such quantities from the blood-vessels that the veins and lymphatics are unable to remove it. It occurs in the legs and not in the other parts of the body, because in the upright position the circulation in the veins and lymphatics is opposed by gravity. In the production of the œdema here we have probably several factors: there is first the watery condition of the blood; next the condition of nutrition of the capillaries; and in addition we probably have a tendency to vaso-motor paresis, for the anæmia lessens the nutrition of the tissues generally, and the vaso-motor centre suffers with the rest.

The occurrence of œdema in the hands when hanging by the sides on a sultry day shows us how very slight an interference with the venous circulation may be sufficient to produce œdema under certain conditions. Usually, however, some interference with the venous or lymphatic flow may be noticed, but there is one case in which œdema may be produced without any apparent interference with either the veins or lymphatics. This occurs in the case of the tongue, for Ostroumoff has found that when the lingual nerve is irritated, not only do the vessels of the tongue dilate, but the whole side of the tongue swells up and becomes œdematous. This might be looked upon as proof positive that mere dilatation of the vessels may cause œdema, but such a conclusion would be premature. We must bear in mind that when we irritate a vaso-dilating nerve we not only make the vessels dilate, but we very probably alter their structure for the time being and render exudation from them more easy.

Claude Bernard's beautiful experiments on the submaxillary gland have taught us that, when the chorda tympani is irritated, the arteries going to the submaxillary gland dilate so much that the blood rushes through them, and through the capillaries that connect them with the veins, in a rapid stream, so rapid that if the vein be punctured the blood issuing from it is no longer dark, but bright and arterial, and instead of trickling out of the vein in slow drops, it jets from it as if from an artery. When this experiment is performed on a normal animal, at the same time that the artery dilates the secreting cells of the gland begin to form saliva, which pours in a stream from the duct during the continuous irritation of the nerve. The secreting cells do not take the material from which they form the saliva directly from the blood, they receive it indirectly from the lymph spaces which surround the alveoli. Into these spaces the lymph exudes from the blood, and from it as from a reservoir the cells take up the materials they want; indeed these spaces will so far act as a reservoir that we may cause the cells to secrete saliva even after the head has been separated from the body, if we take care to fill the lymph spaces with lymph previously by tying the veins of the gland and rendering it to some extent œdematous before cutting off the head. During irritation of the chorda tympani, then, the secreting cells of the submaxillary gland take up lymph very rapidly from the lymph spaces which are adjacent to them, and pour it out in the form of saliva. Quickly as they take up the lymph, however, it is still more quickly poured out from the blood-vessels, so that during the continuance of the irritation we not only have a stream of saliva pouring out from the salivary duct, but we have a considerable increase in the amount of lymph which pours out from the cervical lymphatics. This observation, as well as most of the knowledge that we possess in regard to the flow of lymph and the fundamental facts of secretion in general, we owe to Ludwig. In this experiment we have the lymph which exudes from the vessels carried away by two, perhaps three, channels, viz., the secreting cells of the gland, the lymphatics, and probably also, to some extent, the veins. When we obstruct one of these channels by injecting into

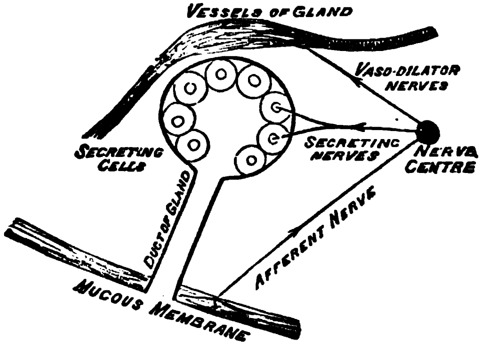

Fig. 45.—Diagram of a salivary gland.

the salivary gland a solution of quinine, or dilute hydrochloric acid, more lymph is poured out from the arteries than the lymphatics and veins together can carry away, and the gland becomes œdematous.

A very remarkable change occurs in the results of this experiment when we administer a dose of atropine to the animal. If we irritate the chorda tympani after poisoning by atropine, the vessels dilate as before, the veins become full, and the current of blood in them becomes rapid, but not a drop of saliva is secreted by the cells.

We are usually in the habit of assuming that the chorda tympani contains two sets of fibres, one of which goes to the secreting cells and another to the vessels; the one set stimulates the glands to functional activity, and the other causes the vessels to dilate.

We usually explain the effect of atropine by saying that it paralyses the peripheral ends of the secreting nerves in the cells of the gland; but if this were the only explanation, we ought to have a result very much like what we get by injecting a solution of quinine into the gland. We ought to have the gland either becoming œdematous, or the flow of lymph in the lymphatics passing from the gland should be enormously accelerated; the lymph which exudes from the vessels ought either to be carried away rapidly by the efferent vessels, or should accumulate and produce œdema, but neither of these results occurs. Heidenhain has found that the gland does not become œdematous under these circumstances, and the flow of lymph through the cervical lymphatics is not accelerated. Now I have already mentioned that under normal conditions, even when the gland is forming large quantities of saliva, and thus removing a quantity of the fluid poured out from the vessels, we have an increased flow of lymph occurring during irritation of the chorda tympani nerve. I can see then no other way of explaining the fact that after poisoning by atropine it does not produce either secretion of saliva or increased flow of lymph from the lymphatics, than by assuming that the atropine has so altered the vessels as to prevent the exudation of lymph from them into the lymph spaces at the same time that it has allowed the arteries to dilate; for we know that the secreting cells of the gland are still able to form saliva because irritation of the sympathetic nerve will cause secretion even after the power of the chorda tympani to cause secretion has been completely paralysed.

I should not be prepared at present to deny that the chorda tympani has fibres which stimulate the secreting cells to increased action.

But what I wish to insist upon here is that in all probability atropine has an action upon the vessels of the gland which has hitherto been entirely overlooked. Yet such an action as I have mentioned is one of the greatest practical importance, because if we are able through the action of our drugs to prevent the exudation of lymph from the blood-vessels into the lymph spaces, it will enormously increase our power to prevent or to lessen dropsy.

In a remarkable research upon the action of drugs on the heart and vessels, Dr. Gaskell showed that dilute acids cause relaxation of the muscular substance both of the heart and blood-vessels, while dilute alkalies have an opposite effect, and cause contraction. He showed also that certain drugs resemble acids in their action, while others resemble alkalies. Thus muscarine, the poisonous principle of mushrooms, tends like acids to cause relaxation of the ventricle and dilatation of the blood-vessels, while atropine has an opposite effect, and resembles alkalies in its action.

Dr. Cash and I have repeated Dr. Gaskell's experiments on the effect of acids and alkalies on the vessels. This action is tested by killing a frog and then keeping up the circulation in it artificially, by connecting the aorta with a vessel containing diluted blood or saline solution. As the pressure is constant, the rapidity with which the fluid flows out of the veins affords a measure of the dilatation or contraction of the vessels. We have observed that not only do the vessels dilate under the influence of acids added to the circulating fluid, so that the liquid pours much more readily out of the veins than before, but that the walls of the vessels themselves appear to become much more permeable, so that the tissues tend to become œdematous.

Under the influence of alkalies the vessels contract, the flow of fluid out of the veins becomes scanty, and no œdema is observed in the tissues. This experiment affords, I think, a clue to the changes in the vascular walls which give rise to dropsy, although much research will still be necessary before our knowledge on this subject is either complete or accurate.

In regard to the action of acids and alkalies upon the vessels, however, we may obtain useful information from the effect of experiments on the submaxillary gland. I have already mentioned that atropine, which Gaskell found to act upon the vessels like alkalies, appears to arrest the flow of lymph from the blood-vessels into the lymph spaces, so that the secretion of saliva is entirely arrested, while the flow of lymph through the lymphatics is certainly not increased, nor yet does the gland become œdematous, although the blood-vessels are fully dilated. As I have said, moreover, by injecting a solution of quinine or dilute hydrochloric acid into the duct of the gland, the secretion of saliva is stopped, but here the gland becomes œdematous. These facts seem then to indicate that the acid has increased the tendency to exudation of lymph from the blood-vessels.

I may again shortly recapitulate what we have now gone over, as to the general sources of dropsy, and then proceed to say a few words regarding particular kinds of dropsy.

Shortly, then, dropsy depends on the quantity of lymph effused from the blood-vessels being greater than the veins and lymphatics can carry away. This may depend either upon obstruction to the veins and lymphatics, or excessive exudation from the blood-vessels. The veins and lymphatics in the normal condition are able, however, to carry away so much more fluid than is effused from the capillaries, that, unless the obstruction to them is very great indeed, no œdema occurs so long as the capillaries are in their normal condition.

In almost all cases of dropsy, then, we may consider that the capillaries are so altered as to allow a greater amount of transudation. The exact nature of the alteration we do not at present know; but such experiments as we have on the subject tend to show that acids, or substances having an action upon the vessels similar to that of acids, may have very much to do with this effect.

The forms of dropsy may be divided either according to their supposed causation or to their seat.

From their causation they may be divided into dropsy of passive congestion, hydræmic dropsy, and inflammatory dropsy.

These may again be subdivided into cardiac dropsy, hepatic dropsy, anæmic dropsy, renal dropsy, scarlatinal dropsy, according to the tissue on the affection of which the dropsy appears to depend.

Another class of dropsies are nervous dropsies, and it is perhaps

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at the present moment rather doubtful how these dropsies are produced, and how far they are dependent on changes in the circulation of blood in the part affected, and how far on alterations in the permeability of the vascular walls.

In dividing dropsies according to their seat we have general œdema, ascites, hydropericardium, pleuritic effusion, hydrocele, and effusion into joints.

In regard to the particular dropsies I shall say only a few words, as, in questions of this sort, if we can settle the general causation of any condition, the application of it to particular instances is easy.

I have mentioned that sometimes, even in health, the mere weight of the column of blood in the arms, and perhaps slight constriction by the clothes on a sultry day, may produce slight œdema in the hands. A similar condition is noticed in the legs in œdema, and it is not unfrequently very marked in cases of fatty heart. Indeed, the occurrence of œdema in the legs when the urine is normal, and no cardiac murmur is to be heard, is, I think, a very important point in the diagnosis of fatty heart.

We find it also markedly in the legs where the venous flow is obstructed in consequence of emphysema or mitral disease. In such cases the effect of the greater pressure of blood in the venous radicals in producing œdema is well shown by its disappearance when the patient has been lying down. That even in such cases, however, the permeability of the capillaries has much to do with the production of œdema is shown by the fact that every now and again we meet with persons who are suffering from great emphysema and excessive interference of the venous circulation, and yet little or no œdema is to be noticed. A sudden change in the condition of the patient, and one too attended by a relief of the general symptoms, may cause œdema to appear.

I was much struck with a case of this sort which I saw a year or two ago. An old woman was suffering from chronic bronchitis with emphysema, the lungs were choked with mucus which she could not expectorate, her face was becoming rapidly more and more livid, she was apparently at the point of death, and yet there was but very slight œdema in the legs. I gave her an emetic of ipecacuanha with the effect of greatly relieving her, clearing the lungs, and removing the lividity, but the day afterwards the œdema in the feet was very well marked. This shows that even in those cases the permeability of the capillaries has much to do with the production of dropsy, although such cases are generally ascribed almost entirely to venous obstruction, and this obstruction has no doubt a great deal to do with their causation.

Another form of œdema is that which occurs in connection with albuminuria—or perhaps it might be better to say, with Cohnheim, in the earlier stages of albuminuria. For Cohnheim divides the dropsies which occur in albuminuria into two classes: the first, which occurs in the earlier stages, is due to changes in the permeability of the vessels, allowing a more rapid exudation of fluid from them. The dropsy which occurs in the later stages, and which affects the serous cavities as well as subcutaneous cellular tissue, he regards as due to passive congestion, secondary to changes in the heart.

The first form, then, of albuminuric dropsy, which affects only the subcutaneous cellular tissue, differs from the dropsy of passive congestion not only by being confined to the subcutaneous tissue, but in affecting different parts of it. In the dropsy of passive congestion the parts which swell are those which are most dependent, such as the feet and legs; but in the dropsy of albuminuria the parts affected are those where the cellular tissue is loose, such as the face. The dropsy of albuminuria is usually ascribed to a more watery condition of the blood, but Cohnheim shows that this alone is not sufficient to produce œdema. So long as the capillaries are in a healthy condition, they do not allow more exudation to take place when the blood is rendered watery by the intravenous injection of a large quantity of dilute saline solution than they do when the blood is in its normal condition. But when the capillaries have become altered by inflammation, which renders them more permeable than usual, the effect of any alteration in the concentration of the blood is at once manifest. The dilute blood, although it does not pass through healthy capillaries more easily than the concentrated blood, exudes through the altered capillaries very much more rapidly than the normal blood, as is shown by the much greater quantity of lymph which is poured out from the vessels of the inflamed limb of a dog, when its blood is diluted by the injection of a large quantity of saline solution into the veins. This experiment shows us that, although alterations in the composition of the blood will not produce œdema when the vessels are healthy, yet, when the vessels are already altered by disease, a diluted condition of the blood tends greatly to increase the œdema; and we thus obtain to some extent an explanation of the good effects of diuretics and purgatives in dropsy; for these remedies, by removing water from the body, will lessen the dilution of the blood.

The ready occurrence of œdema in scarlet fever, and as a consequence of a sudden chill, is ascribed by Cohnheim to increased permeability of the vessels due to inflammatory changes in them. No doubt he is to a great extent right, and the œdema occurs chiefly in consequence of changes in the vessels, but we must try and find out more particularly what the changes are if we are to learn much regarding the rational treatment of œdema. The term *inflammatory* does not help us—at least, does not help us much. We must try and find out whether we can bring the changes in the vessels into direct connection with the action of drugs.

Now one of the most striking forms of dropsy is probably the intense œdema which is said to occur to the natives of the West Coast of Africa, or in Europeans resident in some hot climates in consequence of sudden wetting. This comes on suddenly in the absence of cardiac disease, and in the absence of albuminuria. Now in hot climates the skin secretes much sweat, and this sudden œdema is just what we would expect if stoppage of the functional activity of the sweat glands were to occur without a corresponding arrest of exudation from the vessels. In poisoning by belladonna or atropine, as we have seen, the secretion of saliva is arrested, but the exudation from the vessels of the salivary gland is also diminished. We have no similar experiments regarding the action of atropine upon the vessels of the skin, but probably a similar action occurs in regard to the lymphatics of the skin, for we know that atropine arrests the secretion of sweat in almost exactly the same way as it arrests the secretion of saliva.

In consequence of the diminished exudation from the vessels, we find no œdema occurring in the salivary gland after poisoning by atropine, although the vessels are much dilated, nor do we find any œdema occurring in the skin under similar conditions, even although the cutaneous vessels may be so much dilated that the patient poisoned by atropine presents an erythematous flush all over, like one suffering from scarlet fever. In scarlet fever, also, the secretion from the skin appears to be diminished or arrested, for the skin is dry and has a pungent feeling, which is probably due to the want of cooling by evaporation. But at this time there is no œdema. The skin is red, the vessels are fully dilated, the secretion from the sweat glands is probably completely arrested, and yet there is no œdema. But we can readily see that, if the vessels should by any means become readily permeable before the sweat glands had resumed their function, we should at once have all the conditions for acute œdema.

We can readily see, also, that the blood-vessels will be more readily acted upon by any substance which is circulating in the blood than the sweat glands would be, for, in order to act upon the sweat glands, any substance must first pass through the vessels into the lymph spaces adjacent to the sweat glands, and then be taken up by the secreting cells.

If therefore any substance should either be absorbed from the intestinal canal, or be formed in the tissues of a patient suffering from scarlet fever, which will cause permeability of the capillaries without stimulating secretion of the sweat glands, we would expect œdema to occur. Now it would almost appear that certain abnormalities, either in digestion or in tissue change, precede the œdema of scarlet fever and the albuminuria which accompanies it, for here, I think, we must look upon the albuminuria and the œdema, not as dependent upon one another, but as consequences of one common cause, which probably is the presence of something in the blood which acts as a poison upon the tissues already predisposed to its action. Now Dr. Mahomed found what he regards as a pre-albuminuric stage of scarlet fever, in which he noticed a peculiar reaction of the urine, which gave a blue with guaiac. If the patient was left alone when this action was noticed, albuminuria came on, but if a brisk purgative was at once administered, the abnormal condition passed away and no injury resulted.

The œdema of scarlet fever is usually considered to be due to some chill, but we do find cases in which the utmost care has been taken, and where we cannot trace any distinct history of a chill, and yet œdema occurs. A chill may, no doubt, not only induce changes in the circulation, but may induce changes in the alimentary canal, and in the tissues generally, by which substances may be formed which, after their absorption into the blood, may increase the permeability of the vessels. But I think, at the same time, we must keep our eyes open to the possibility of such substances being formed even without any exposure.

The phenomena which occur in urticaria are, I think, instructive in regard to the possible causation of dropsy by poisons circulating in the blood, for there we frequently find that after the ingestion of certain articles of diet the skin becomes bright red, the capillaries dilated, and what are really spots of local œdema occur. These may be very limited, or they may be extensive, as in the case of a lady of my acquaintance in whom a single strawberry will produce such intense urticaria that the face swells up and the eyes become almost closed by the accompanying œdema.

Now in urticaria the round white swellings resembling the effects of the sting of a nettle suggest the idea that they arise from some point in the centre, and it seems not improbable that the originating point is a sweat gland. Both in urticaria and in the sudden œdema occurring after a chill in hot climates, I am inclined to regard the sweat glands as playing an important part, and paralysis of the secreting power as a cause of œdema, not only because the fluid effused from the blood-vessels ceases to be drained away from them, but also because it seems to me not improbable that, although the secretion is not fully elaborated, such changes may occur as will produce acid in the secreting cells. Normally this will be carried away in the sweat, but if retained it may react upon the capillaries in the same way as Cash and I have found in our experiments, and thus increase the amount of fluid poured out from them.

I have preferred in this paper on the pathology of dropsy, to deal most at length with the particular points which seem to me most likely to lead us to a rational and successful treatment.

Again to recapitulate. Dropsy consists in the accumulation of lymph in small lymph spaces or large serous cavities. The accumulation is caused by more lymph being poured out from the vessels than can be removed by the lymphatics and veins. Obstruction to the lymphatics and veins will rarely produce dropsy unless the quantity exuded from the capillaries is greater than the normal. The exudation from the capillaries is increased by changes which occur in them. These changes are classed generally by Cohnheim under the name of *inflammatory*. This designation is too vague to give us any guide to treatment, and I have tried to point out that the increased permeability of the vessels is probably due to an alteration in them. It may be produced by acids circulating in the blood, as in the experiments of Cash and myself; by acids applied to them from without, as in Ludwig's experiment with the submaxillary gland; or by acids, or poisons which act like acids, absorbed from the intestinal canal, or formed in the tissues themselves (cf. p. 274).

APPENDIX.

Since I wrote this paper I have become acquainted with some facts which seem to me to support the views regarding the action of acids which I have advanced. Through the kindness of Professor Hans Meyer of Dorpat, I have received an Inaugural Dissertation, written under his direction by Jacob Feitelberg, on the action of various poisons upon the acidity of the blood. In this paper the author shows that a number of poisons have the power of increasing the acidity of the blood. They appear to do this by diminishing oxidation, as it is found that, along with an increase of acid, which chiefly appears to be sarcolactic acid in the blood, the carbolic acid in it is lessened. One drug which has this power in a marked degree is arsenic, as we know one of the common symptoms of arsenic poisoning is an œdematous condition of the eyelids. This effect of arsenic on the amount of acid in the blood seems to me to afford a ready explanation of the œdema which it produces.

ON THE ACTION AND USE OF DIURETICS.

(*'Practitioner,'* VOL. XXXII., *April and May*, 1884.)

THE part which water plays in the animal body is a very important one. Not merely does it form by far the greatest part of the body itself, constituting no less than 59 per cent. of its weight, but the life of all the tissues is essentially dependent on its presence in them. Without water no vital function can go on. In the dry climate of Egypt wheat has been preserved unchanged since the days of the Pharaohs, without the slightest tendency to growth having occurred until it was moistened; and when rotifer animalculæ are dried up they will fly about as dust devoid of any appearance of life, until they are again put into the water. In the complicated organism of the human body the same thing occurs, though to a much less extent. We cannot have any one of the tissues completely desiccated, otherwise it would, like the rotifer, lose all its vital functions, but, unlike it, would not regain them when a fresh supply of water was brought to it. Diminution of water to a certain extent may be endured by the tissues without injury, but it will diminish tissue change in them, while increase of water will augment it. When much water is drunk, as certain experiments have shown, the tissue change is increased to such an extent that the body must rapidly waste, and the necessity for more food to supply them is indicated by the ravenous appetite which is induced, as well as by the loss of body weight which occurs when the appetite is not gratified. Not only does water increase tissue change, it removes the waste products produced more rapidly than usual, and, indeed, the effect of water-drinking upon the body, in increasing tissue change and removing the waste products, may be compared to raking out the ashes from a fire, and at the same time making it burn more brightly. All the water drunk must find its way out of the body again by one channel or another. Some of it passes off through the lungs, and a little by the bowels, but the greater proportion passes through the skin and kidneys. The action of these organs is compensatory.

It is difficult to estimate precisely how much is excreted by the skin, but probably it may be taken at about two-thirds of the quantity eliminated by the kidneys. When the skin is active the kidneys have, consequently, less work to do, and when the secretion from the skin is sluggish, the kidneys must secrete all the more. Some years ago, while making experiments upon the urinary secretion, I found that on the sudden occurrence of a cold day after a succession of warm ones, the amount of urine secreted was very nearly doubled. One reason of this compensatory function of the skin and kidneys probably is that the secretion in both, like the secretion in other glands, depends to a great extent on the supply of blood going to them. When the supply of blood is greater, the secretion is also increased. On a warm day, or when the body is exposed to external warmth, the vessels of the skin dilate, and the cutaneous glands are freely supplied with blood. The application of cold to the surface of the body, on the contrary, causes the cutaneous vessels to contract, and thus more blood is driven to the internal organs—the kidney amongst the rest.

The utility of this arrangement is obvious, for although the skin has an excreting function complementary to that of the kidneys, its chief function is that of regulating the temperature of the body. When the temperature rises either in consequence of active muscular exercise or from any other cause, the vessels of the skin dilate, and if the temperature of the external air be lower than that of the body, heat is lost by radiation. The blood returns cooled from the cutaneous capillaries to the internal organs, and thus the temperature is again brought down to the normal. But even when the temperature of the external air, instead of being lower, is higher than that of the body, the skin still acts as a cooling apparatus by means of the evaporation of sweat. The quantity of heat which is changed into potential energy in the process of converting liquid water into gaseous steam is very great. Five and a half times as much heat are required to convert boiling water into steam as to raise the same amount of water from the freezing to the boiling point. The immense loss of heat occasioned by the evaporation of the perspiration is so great that in negroes on the west coast of Africa it has been noticed that the skin, while perspiring profusely, is as cold as marble, and Sir Charles Blagdon observed that in a room with a temperature of 128° F. his side felt quite cold to the touch. The skin cooled by perspiration therefore acts even with a high external temperature as a refrigerating apparatus to the blood, and prevents the temperature of the body from rising too high. When the external temperature is low the vessels of the skin contract so that little blood circulates through them, and loss of heat by conduction or radiation or by perspiration is, to a great extent, prevented. It is evident that on a hot, dry day, with active exertion the loss of water by the skin must be considerable, and sometimes work must be done with but a limited supply of water to drink. At the same time the products of waste must be removed, and under such circumstances, although the skin excretes a very large quantity of water, it excretes but a small quantity of solids. The kidneys are thus put to a great disadvantage. They have still to excrete the solids: they can only do so when these solids are in a state of solution, and yet if they excrete the usual amount of water while more than usual is being thrown off from the skin, and, perhaps, less than usual is being drunk, the proper proportion of water in the body will rapidly be reduced below the normal, and its functions seriously disturbed. In order to prevent this there seems to be an arrangement in the kidney whereby water is retained after it has served its purpose of washing the solids so far through the kidneys that they can be afterwards eliminated without it. The products of tissue waste must be removed in a state of solution from the part of the kidney where they are excreted, and yet sometimes provision must be made for the water by which they are washed out being retained in the body. The urine in mammals and amphibia is liquid; in birds and reptiles it is semi-fluid or solid, yet the solid constituents are removed in solution from the urinary tubules, and the water in which they are dissolved is afterwards absorbed.

In cold weather, on the other hand, the vessels of the skin are contracted, there is little or no perspiration, and yet it may so happen that the individual is obliged to live on food containing a large proportion of water. This difficulty must also be met, and so in the kidney we have a provision for the removal of water without solids.

We may say then that the kidney has a threefold function:—1st, that of excretion of waste products; 2ndly, a provision for the removal of excessive water; and 3rdly, an arrangement for the retention of water in the body by its re-absorption, after it has washed out the waste products. On looking at the kidney we find three structures which seem to be connected with these three functions, viz.: (1) convoluted tubules with epithelial cells, which in all probability are the chief structures for excreting waste products; (2) the malpighian corpuscles for excreting water along with some solids; and (3) usually one or more constrictions in the tubule which may serve the purpose of preventing too rapid exit of the water, and thus allow time for its re-absorption in cases where its retention is desirable, as for example on a hot day and when the supply of drinking-water is very limited.

The process of secretion in the kidney was regarded by Bowman as consisting of the filtration of water from the vessels of the glomeruli into the tubule, and the excretion of waste products by the epithelium lining the tubule. Ludwig, however, came to look upon it rather as a process of filtration and re-absorption; a dilute solution of urea and salts being, according to him, poured out from the malpighian corpuscles and gradually concentrated by the absorption of water in its passage along the tubules. This theory had so many facts in its favour that it was for a good while exclusively adopted, but latterly Heidenhain in an admirable series of experiments has shown that substances like indigo are certainly excreted by the epithelium of the tubules. At the same time Hüfner has shown by a comparison of the structure of the kidney in fishes, frogs, tortoises, birds, and mammals, that the form of the tubules closely agrees with that required for the re-absorption of water in each case. Fishes have a low blood-pressure, and so the resistance in the kidney requires to be small in order to allow of the secretion of urine. Living as they do in water, they do not require any apparatus for its retention in the body. In them therefore the tubule is short and wide, and destitute of any constriction which would retard the outflow of fluid. In frogs there must be ample provision for the retention of water in the body, as evaporation takes place freely from their skin. In them we find, as we might expect, that the tubule, and especially the contracted part of it, is very long. In tortoises no evaporation from the skin can take place, and in them the contracted part of the tubule is short. This renders it probable that, while the ideas advanced by Bowman and supported by Heidenhain are in the main true, the re-absorption of water on which Ludwig lays so much stress is also a most important factor in the secretion of urine under different circumstances.

But it is not only rendered probable by the facts of comparative anatomy; it appears to be proved by direct experiment. Ribbert[1] has extirpated the medullary substance of the kidney in the rabbit while leaving the cortical substance. He has thus succeeded in collecting the urine as it is excreted by the malpighian corpuscles before it has passed through Henle's loops, and has found that the urine secreted by the cortical substance alone is much more watery than that which is secreted by the entire kidney, a fact which appears conclusively to prove that water is actually re-absorbed, and the urine rendered more concentrated, during its passage through the tubules in the medullary substance.

Fig. 46.—Diagram showing the form of the urinary tubules in different classes of animals, after Hüfner. 1. Fish. 2. Frog. 3. Tortoise. 4. Bird. 5. Mammal. The letters have the same significance in each. *a.* Capsule of the glomerulus. *b.* Convoluted tubule. *c.* Loop. *d.* Collecting tube. *u* in 2 indicates the transverse section of the ureter.

In the frog and triton the arrangement of the kidney is such as to allow of a much more complete investigation of the different factors in secretion than in mammals, because in amphibia the glomeruli which separate the water and the tubules which excrete the solids receive their blood supply to a great extent independently. The glomeruli are supplied by branches of the renal artery. The tubules are supplied by a vein which proceeds from the posterior extremities, and entering the kidney, breaks up into a capillary plexus bearing a somewhat similar relation to the renal tubules, to that which the portal vein bears to the lobules of the liver. It is therefore called the portal vein of the kidney.

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[1] Ribbert, *Virchow's Archiv*, July 1883, p. 189.

The arterial circulation in the glomeruli is not entirely distinct from the venous portal circulation round the tubules, for the efferent arteries of the glomeruli unite with the portal capillaries, and, moreover, arterial twigs also pass directly from the renal artery into the capillary venous plexus. Still the two systems are so far distinct that Nussbaum has been able to ascertain with considerable exactitude the part played by each in secretion. By ligaturing the renal artery he destroys the functional activity of the glomeruli, and by ligaturing the portal vein of the kidney he destroys that of the tubules. By injecting a substance into the circulation after ligature either of the artery or the vein, and observing whether it is excreted or not, he determines whether it is excreted by the glomeruli or the tubules. In this way he finds that sugar, peptones, and albumen pass out through the glomeruli exclusively, for they are not excreted when the renal arteries are tied. Albumen, however, only passes out through the glomeruli when an abnormal change has already occurred in the vascular wall; as, for example, after the circulation has been arrested for a while by ligature of the renal artery. Indigo-carmine, when injected after ligature of the renal arteries,

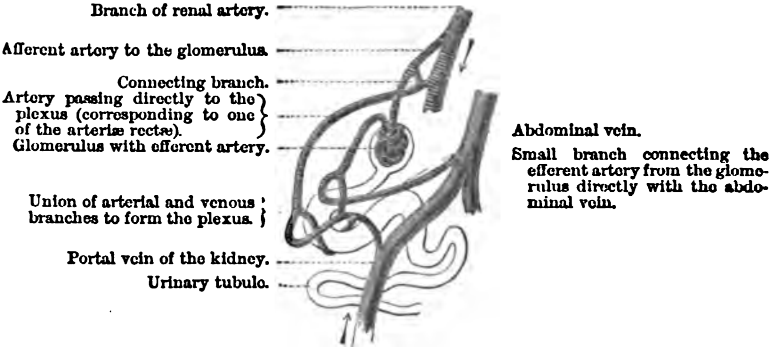
Branch of renal artery.
Afferent artery to the glomerulus.
Connecting branch.
Artery passing directly to the plexus (corresponding to one of the arteriæ rectæ).
Glomerulus with efferent artery.
Union of arterial and venous branches to form the plexus.
Portal vein of the kidney.
Urinary tubule.
Abdominal vein.
Small branch connecting the efferent artery from the glomerulus directly with the abdominal vein.

Fig. 47.—Diagram of the circulation in the kidney of the newt. Modified from Nussbaum.

passes into the epithelium of the tubules, but it does not give rise to any secretion of water, so that the bladder is found empty. Urea, on the contrary, is not only excreted by the tubules after ligature of the renal artery, but carries with it, in the process of secretion, a considerable quantity of water from the venous plexus, so that the bladder becomes partially filled.

The excretion of water, therefore, takes place in a double manner: it passes out through the glomeruli when the renal arteries are free, and it passes out from the venous plexus along with urea, even although the renal arteries are tied.

In the kidneys of the higher animals and of man the glomeruli and the tubules do not receive blood from two entirely different sources, but there is an arrangement somewhat similar to that just described; for the plexus surrounding the tubules does not receive blood only from the efferent vessels of the malpighian corpuscles, it gets blood also directly from the renal arteries.

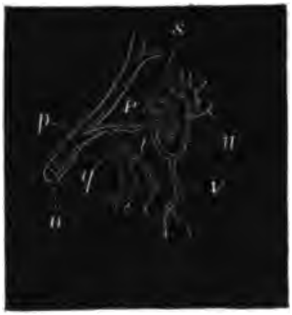

Fig. 48.—Diagrammatic sketch of the blood-vessels in a mammalian kidney. From Schweigger-Seidel, *Die Nicren*, Halle, 1865. *o* is an artery ascending into the cortical substance of the kidney. *p* is a branch from it which divides into two branches, *q* and *P*. *q* breaks up at once into a number of twigs. *P* is the afferent artery to a glomerulus (*s*) of the lowest row. *t* is the afferent vessel of the glomerulus; it divides into two branches, one of which (*u*) ascends towards the cortex, whilst the other (*v*) descends towards the medulla.

There are three channels by which the blood may pass from the renal arteries into the venous plexus without going through the glomeruli.

The first is the inosculation which takes place between the terminal twigs of the renal artery and the venous plexus on the surface of the kidney directly under the capsule (stellate veins, Fig. 35, p. 301).

The second channel is formed by small branches given off directly by the interlobular arteries or by the afferent arteries before they reach the glomeruli.[1] The former of these may be regarded as corresponding to the artery which passes directly to the plexus in the newt, and the latter to the branch connecting it with the afferent artery (Fig. 48). These arterial twigs are found not only near the surface of the kidney, but also in the deeper layers of the cortical substance.[2]

The third and most important channel is afforded by the arteriæ rectæ, which spring from the branches of the renal artery at the boundary between the cortical and medullary substance and pass into the medulla, where they form a plexus with elongated meshes surrounding Henle's loops and the collecting tubules. Near their origin the arteriæ rectæ inosculate with the venous plexus surrounding the convoluted tubules (Fig. 49, p. 359).

Through these three channels it is possible for blood to reach the secreting structures of the kidney and there get rid of urea, salts, &c., without losing water by its passage through the glomeruli. On the other hand, if these vessels contract, while the size of the renal artery and the pressure of the blood within it remain unaltered, more blood will be forced into the malpighian corpuscles, and thus the quantity of water excreted will be increased. At the same time the contraction of the arteriæ rectæ will probably diminish absorption from the tubules, and thus the quantity of water excreted will be increased in a twofold manner.

Circumstances modifying the Secretion of Urine.—The experiments of Ludwig and his pupils have shown that the amount of urine secreted depends very closely upon the pressure of blood in the malpighian corpuscles, or, to put it more exactly, on the difference of pressure between the blood in these corpuscles and the pressure within the tubules. For if the ureter be tied so that the pressure of urine in the tubules is increased, the secretion is greatly diminished, and even arrested, although the pressure of blood in the renal artery be high.

A somewhat similar effect to that of ligature of the ureter is produced by ligature of the renal vein, for the blood accumulating in the venous plexus surrounding the tubules compresses them so as to prevent the flow of urine through them. A similar condition may occur from cardiac or pulmonary disease obstructing the venous circulation.

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[1] Ludwig, *Handwörterbuch d. Physiol.*, v. R. Wagner, Bd. 2.

[2] Schweigger-Seidel, *Die Nieren*, p. 67; Heidenhain, *Hermann's Handbuch d. Physiologie*, vol. v. Th. I. p. 293.

But unless in exceptional circumstances which alter the pressure within the tubules, such as compression of the tubules by congestion of the venous plexus, as in cardiac disease, impaction of a calculus in the ureter, or pressure on the ureters by dropsical accumulations or tumours, the rapidity of the secretion of urine depends on two factors:—(1) arterial pressure in the glomeruli; and (2) the composition of the blood.

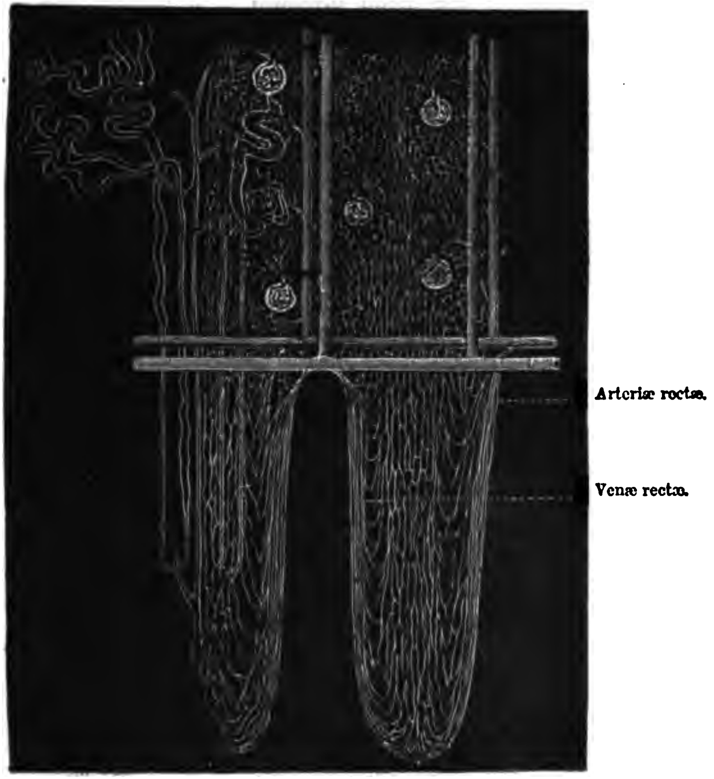

Fig. 49.—Diagram of the tubules and vascular supply of the kidney. On the left is a tubule alone, in the middle is a tubule along with the blood-vessels, on the right are blood-vessels only.

The pressure of blood in the glomeruli may be raised—

(1) by increase of the arterial tension generally,

(2) by increased tension locally.

Thus the effect of cold winds and cold baths is probably due chiefly to their power of contracting the vessels in other parts of the body, and thus driving more blood into the renal artery, and increasing the pressure in the glomeruli. In some pathological conditions also we find the blood pressure high, and the secretion of urine abundant. This occurs, as a general rule, in persons suffering from cirrhotic or contracting kidney, in whom the pulse is generally tense, and the blood pressure high, although in these cases also the high blood pressure is probably not the only factor in the increased secretion.

Such a general increase may be brought about by greater action of the heart, or by contraction of the blood-vessels in other vascular areas, such as the intestines, muscles, or skin, by nervous stimulation, exposure to cold, or the action of drugs.

The pressure may be increased locally by dilatation of the renal arteries, *e.g.* from section of the vaso-motor nerves, or possibly stimulation of vaso-dilating nerves.

In addition to such increase of pressure in the glomeruli by increase of blood supply to them, we must not, however, forget the possibility of increased pressure in them by contraction of the efferent vessels leading from them, as well as of those arterial twigs (arteriæ rectæ) which pass directly to the venous plexus surrounding the tubules, and which form no inconsiderable part of the vascular supply of the kidney.

Alterations in the size of the renal vessels were formerly ascertained simply by exposing the kidney and observing its colour, contraction of the arteries being associated with paleness, and dilatation with redness of the organ. A much more exact method has been introduced by Roy, who incloses the kidney in a capsule filled with oil and connected with a registering apparatus. When the vessels dilate, the kidney increases in size, and diminishes when it contracts, so that the alterations can be readily recorded on the same revolving cylinder on which the general blood pressure is registered by the manometer.

The pressure of blood in the glomeruli may be diminished generally—

(1) by failure of the heart's action, or

(2) by dilatation of vessels in larger areas, as the intestines, muscles, and skin.

The pressure of blood in the glomeruli may be diminished locally by contraction of the renal arteries, or of the afferent branches to the glomeruli.

The heart's action may fail from many causes, which have already been discussed more particularly.

Dilatation of the vessels in the skin, intestines, &c., may be caused by exposure to warmth, by the action of drugs, or by paralysis due to nervous injury.

Section of the splanchnics or of the spinal cord causes paralysis of the renal arteries, and ought, therefore, to increase the secretion of urine. This does occur, though not invariably, when the splanchnics are divided; but section of the spinal cord, by paralysing the intestinal and other vessels, lowers the blood pressure so much that the supply of blood to the kidney is not only much below the normal, but is so small that the secretion of urine is generally almost completely arrested.

The nerves of the kidney consist of a number of small branches running along the renal artery and containing a number of ganglia. When these nerves are cut the vessels of the kidney dilate; when they are stimulated the vessels contract. A number of these fibres pass to the kidney from the spinal cord through the splanchnics, so that when the splanchnics are cut the vessels of the kidney usually dilate, and when they are irritated, they contract.

The whole of the nerves, however, do not pass through the splanchnics, for stimulation of a sensory nerve, of the medulla oblongata, or of the spinal cord in the neck, will cause contraction of the renal vessels after both splanchnics have been cut, and section of the splanchnics does not always cause the renal vessels to dilate.

The nervous centre for the renal arteries is probably, like the chief vaso-motor centre for the body generally, in the medulla oblongata; but in all probability there are also subsidiary centres in the spinal cord and in the solar and mesenteric plexuses.

The reason for supposing these latter centres to exist is, that stimulation of the peripheral end of the splanchnic, divided at its passage through the diaphragm, causes contraction of both kidneys, and the vessels of the kidney of the side opposite to the stimulated nerve commence to contract later than that on the same side. A delay like this in the action of the stimulus means that it has not acted directly, but through the medium of ganglia.

When the splanchnics are divided, the vessels of the kidney sometimes dilate and the kidney increases in size; a profuse secretion of urine may take place, which quickly increases to a maximum and remains for a considerable time. This, however, is not a constant effect, and not unfrequently the vessels do not dilate, and the kidney, instead of increasing, diminishes in size. This is what to a certain extent might be expected, inasmuch as a section of the splanchnics causes dilatation of the intestinal vessels and lowers the blood pressure, and thus diminishes the supply of blood to the kidney.

When a puncture is made in the medulla oblongata in the floor of the fourth ventricle, profuse secretion also occurs, but this differs from that caused by section of the splanchnics, in being preceded by slight diminution, in rising rapidly to a maximum, and then rapidly falling. These characters seem to show that it is due to irritation of some vaso-dilating mechanism[1] rather than to any paralysis.

Stimulation of the vaso-motor centre in the medulla oblongata by venous blood, or by drugs such as strychnine or digitalis, has a twofold action on the kidney, for it tends to cause contraction not only in the vessels of the kidney, but in those of other parts of the body. The effect on the kidney is thus a complicated one, for the contraction of the intestinal and other vessels by raising the blood pressure tends to drive blood into the kidneys at the same time that the contraction of the renal arteries tends to keep it out. When the renal nerves are cut, the renal vessels no longer oppose the entrance of blood, and therefore the renal vessels dilate very greatly when the vaso-motor centre is stimulated; but when the renal nerves are intact the result is a varying one, for sometimes contraction of the renal vessels may be so great as to prevent the entrance of blood into the kidney, however high the general blood pressure may rise; at other times the general high blood pressure may be able to dilate the renal arteries in spite of any resistance they may offer. These different conditions may occur subsequently to one another; and this stimulation of the vaso-motor centre may cause contraction of the renal vessels succeeded by dilatation, or *vice versâ*. Thus Mr. Power and I found that on injecting digitalis into the circulation of a dog the blood pressure rose, but the secretion of urine was either greatly diminished or ceased altogether. Here it is evident that the renal vessels had contracted so much as to prevent the circulation through the kidney, notwithstanding the rise which had taken place in the blood pressure. After a while the blood pressure began to fall, and then the secretion of urine rose much above its normal,

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[1] Heidenhain, *Hermann's Handbuch d. Physiologie*, vol. v. Th. 1, p. 366.

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showing that the general blood pressure was then able again to drive the blood into the kidneys.[1]

Similar observations were made by Mr. Pye and myself with regard to erythrophlœum, and the accompanying curves show well the result of the mutual action of rise in blood pressure and contraction of the renal arteries upon the secretion of urine. It will be noticed that at first the blood pressure rises more quickly than the secretion of urine, the circulation through the kidney appearing to be opposed by the renal arteries. This opposition is then overcome, and the secretion of the urine rises more quickly than the general blood pressure. The renal vessels again appear to contract, so that the urine diminishes while the blood pressure rises still further. We have next oscillations due first to one factor and then to the other being predominant; and then, when the blood pressure rises to its maximum, we find that the urine is at its minimum, the secretion of urine again rising as the blood pressure falls.

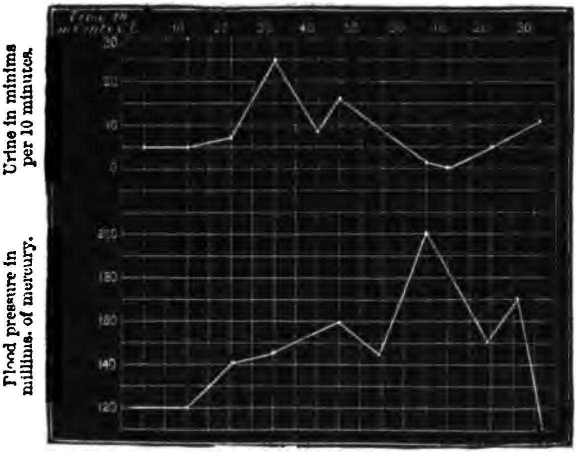

Fig. 50.—Curves showing the effect of erythrophlœum upon the blood pressure and secretion of urine. From *Phil. Trans.*, vol. 167.

A good deal of discussion has arisen regarding the mode of action of digitalis, and it has been stated by many to act as a diuretic only in cases of heart disease, and to have no diuretic action in health. In my own experiments, however, I found that it acted as a very marked diuretic even in health, and the explanation of this discrepancy may possibly be that, in my own case, the normal blood pressure was low, whereas in the others it was probably much higher; but I am uncertain regarding the true explanation, though I am certain of the fact.

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[1] *Royal Society's Proceedings*, No. 153, 1874

By causing increased secretion of water through the kidneys diuretics may increase the concentration of the blood and thus produce thirst, or cause absorption of water from the intercellular tissue or serous cavities in dropsies. In my own experiments on digitalis I weighed all my food and measured all my drink for nearly six months, taking exactly the same quantity every day. After producing profuse diuresis by a large dose of digitaline (sixty milligrammes in two days), such thirst ensued that I was forced to take a quantity of water to allay it.[1]

Mode of Action of Diuretics.—From what has already been said, it is evident that diuretics may act in several ways. They may act:

(A) On the circulation in the kidney, raising the pressure in the glomeruli.

(1) *Locally* (*a*) by contracting the efferent vessels, or the arterial twigs which pass directly to the capillary plexus; (*b*) by causing dilatation of the renal arteries, and thus increasing the supply of blood to the kidney. This they may do also in more ways than one, for they may either paralyse the vaso-motor nerves of the kidney, or act on vaso-dilating mechanisms.

(2) They may raise the blood pressure *generally* by causing the contraction of vessels in other parts of the body.

(B) Other diuretics may act on the secreting cells of the tubules, and may increase both the amount of water and the amount of solids excreted by them.

Diuretics have been by some classified as stimulating and sedative; and the sedative class agrees very closely with the one which we have just indicated as acting on the kidneys through the circulation.

From what has been said of the action of diuretics it is evident that we may hope to do much more by combining them, than by using them singly. Thus we see that digitalis, instead of acting as a diuretic, may completely arrest the renal circulation, and stop the secretion altogether. If, however, we can combine it with something which will produce dilatation of the renal vessels, while the general blood pressure remains high, we shall greatly increase the circulation through the kidney, and obtain the desired result. Experiments in regard to this were made by Grützner with nitrite of sodium. He found that this substance increased the secretion of urine when the blood pressure was reduced to a minimum by curara; and he found that it also had this effect when the blood pressure was raised by imperfect respiration. When the vaso-motor centre was excessively stimulated however, by allowing the blood to become very venous, the nitrite of sodium no longer produced any increase of secretion.

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[1] The experiments were made in 1865 and published in part in my thesis on *Digitalis, with some Observations on Urine.* London: Churchill, 1868.

All nitrites have an action on the blood-vessels more or less alike. All of them cause the arterioles to dilate either by an action on their muscular walls or on the peripheral terminations of vaso-motor nerves. One of the commonest diuretics is spiritus ætheris nitrosi, which contains nitrite of ethyl. Sometimes this is combined with acetate of ammonia as a diaphoretic, sometimes with digitalis, broom, or spirit of juniper, as a diuretic. We have already seen that the action of the skin and of the kidneys are complementary, so that if we increase the secretion from the one we tend to diminish that of the other. At first sight then it might appear curious that we should use the same drug to increase the secretion of both. Yet there can be little doubt from clinical experience that nitrous ether is useful for both purposes, and the reason of its utility at once becomes evident when we remember that it is strictly neither diaphoretic nor diuretic, but its action is simply that of dilating the vessels, and consequently allowing the blood to flow freely in whatever direction it may be determined by other conditions. If by combining it with digitalis we can dilate the renal arteries while those of the other parts of the body remain contracted, it is evident that we shall obtain a much freer flow of urine than we could by the administration of digitalis alone.

If instead of a diuretic like digitalis, which acts chiefly through the blood-vessels, we combine spirits of nitrous ether with salts of potassium, which act on the secreting structure, it is evident that we are likely to obtain from the increased circulation in the kidneys caused by the nitrites a much more plentiful secretion than the potassium salts alone would have produced.

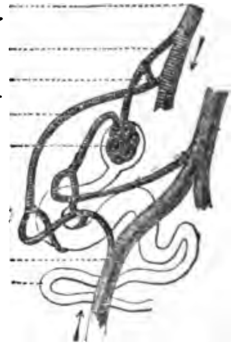
The mode of action of diuretics may perhaps be rendered clearer by the following table. At present the data we possess are insufficient to allow us to classify diuretics with absolute certainty according to their mode of action, yet I think the accompanying table may be fairly said to represent our present knowledge of the subject, its imperfections being indicated by the number of notes of interrogation which the table contains.

TABLE SHOWING THE PROBABLE MODE OF ACTION OF DIURETICS.

DIURETICS	Raise arterial pressure ...	Generally	Increased action of the heart by alcohol. Contraction of vessels in intestine and throughout the body.		Digitalis. Erythrophlœum. Strophanthus. Squill. Convallaria. Strychnia. Cold to surface.
		Locally in kidney...	Contract efferent vessels or arteria recta so as to raise pressure in glomerulus and lessen absorption in tubules, or both.	By action on vaso-motor centres.	? The same as in preceding list.
				By local action on vessels or nervous structures in the kidney itself.	? Broom. ? Turpentine. ? Juniper. ? Copaiba. ? Cantharides.
			Dilate afferent vessels	Paralyse vaso-motor nerves or involuntary muscular fibre. Stimulate vaso-dilating nerves	Nitrites. Alcohol. ? Urea.*
	Act on the secreting nerves, or secreting cells of the kidney itself.	Increase water excreted.	Urea. Caffeine.		
		Increase solids excreted.	Liquor potassæ. Potassium acetate, &c.		

* When a current of blood is passed artificially through an excised kidney, the stream is much accelerated by the addition of urea. Abeles, *Sitz-Ber. d. k. k. Wiener Akad.* Bd. 87, Abt. 3, April, 1883.

It not infrequently happens that one is able to understand a hypothesis more clearly when it is put in a diagrammatic form, and that one can thus perceive more readily the particular points in which it may be erroneous, even if true in the main. I therefore subjoin a diagram of the circulation and secreting apparatus of the kidney to show the parts which are probably affected by different diuretics:—


Afferent vessels. (?) Dilated by nitrous ether, potassium nitrite ....

Efferent vessels. (?) Contracted by digitalis, strychnine, erythrophlœum, squill.

Tubules. (?) Stimulated by urea and potassium nitrite, acetate, &c. Caffeine, turpentine, cantharidine (?) Paralysed by curare (?) ....

Fig. 51.—Diagram to show the parts of the secreting apparatus of the kidney which are probably affected by different diuretics.

Uses.—Diuretics may be employed either for the purpose of removing water or solids from the body. They are used:

1st, to remove the excess of fluid met with in the tissues and serous cavities in cases of dropsy.

2nd, to hasten the removal of injurious waste products and poisonous substances from the blood.

3rd, to dilute the urine.

In cases where the accumulation of fluid depends on venous congestion, as for example in cardiac dropsy, those diuretics which act on the general vascular system, like digitalis, strophanthus, squill, or erythrophlœum, are most efficient because they tend to remove the cause of the dropsy, as well as to assist the absorption and excretion of the fluid already effused.

When the dropsy depends on the disease of the kidneys or liver, other diuretics should either be given instead of, or along with, digitalis or squill, even in cases of cardiac disease. Where digitalis or squill are not proving efficacious, the addition of a little blue pill greatly assists their action, though it would be hard to say in what way it does so.

In dropsy depending on kidney disease, decoction of broom, and oil of juniper, and nitrous ether, are amongst the most reliable diuretics, and copaiba in hepatic dropsy.

Diuretics are used to increase the secretion of solids in febrile conditions, and in cases of kidney disease where the excretion of waste products is deficient, and their retention threatens to prove injurious. In such cases, nitrate and bi-tartrate of potassium, turpentine, and juniper, and caffeine are useful.

Diuretics are also used to increase the proportion of water in the urine, and thus to prevent the solids being deposited from it and forming calculi in the kidney or bladder; or even to dissolve again concretions which have been already formed.

Water is perhaps the most powerful diuretic we possess, although fewer experiments have been made with it upon animals than with the others. The diuretic action of water drunk by a healthy man is very marked, and it appears impossible to explain its elimination by a mere increase in blood-pressure, whether general or local. It has, as we have remarked, the power of increasing tissue change, and thus multiplying the products of tissue waste which result from it, but it removes those waste products as fast as they are formed, and thus, by giving rise to increased appetite, provides fresh nutriment for the tissues, and thus acts as a true tonic. In persons who are accustomed to take too little water, the products of tissue waste may be formed faster than they are removed, and thus accumulating may give rise to disease. If water be freely drunk by such persons, the products of waste will be removed, and health maintained or restored. Thus many gouty persons are accustomed to take little or no water except in the form of a small cup of tea or coffee daily, besides what they get in the form of wine or beer. In such people a large tumbler of water drunk every morning, and especially with the addition of some nitrate or carbonate of potassium, will prevent a gouty paroxysm. Still more numerous, possibly, is the class of people who rise in the morning feeling weak and languid, more tired, indeed, than when they went to bed. Now fatigue may be regarded as the imperfect response of muscles and nerves to stimuli, and such an imperfection in their action may be due either to their imperfect nutrition or to the imperfect removal of the products of their waste. Many such people are well fed, they sleep soundly, and it seems almost impossible to believe that the fatigue which they feel in the morning can result from imperfect nutrition, more especially as one finds that after moving about, the languor appears in a great measure to pass off. It seems to me that this languor must depend upon imperfect removal of the waste products from the body, as we know that the secretion of urine in healthy persons is generally much less during the night than during the day. I am therefore in the habit of advising such people to drink a tumbler of water before going to bed in order to aid the secretion of urine and elimination of the waste products during the night. In some cases, though not in all, the result has been satisfactory, and possibly might have been still more so had I added to the water the bi-carbonate and nitrate of potassium which, as I have already mentioned, is so useful in cases of gout.

Lately a plan of treating gout by draughts of water at intervals during the day has been a good deal employed and is in many cases successful. As an example of this I subjoin the diet used along with this treatment by a medical friend of mine who has been a martyr to gout, but who feels himself perfectly well as long as he adheres strictly to this course of diet:—

7.30 A.M. Ten fluid ounces very hot water.

8 A.M. Breakfast: Equal parts of weak tea and milk, a small quantity of white sugar, a slice of fat bacon without a strip of lean, bread and fresh butter.

1 P.M. Milk pudding, rice, sago, tapioca, macaroni, or blanc mange, and small biscuits with butter, ten fluid ounces hot water.

4 to 5 P.M. Ten fluid ounces hot water.
6 P.M. Dinner: White fish or fowl (usually boiled), greens, bread, no potatoes, claret seven fluid ounces.
8 to 9 P.M. Ten fluid ounces hot water.
11 P.M. Ten fluid ounces hot water.

If he indulges either in meat or game, or drinks copiously of claret, or omits one or two glasses of hot water, he feels gouty and gravelly next day. It is obvious that by this plan of treatment, in which the ingestion of nitrogenous food is most strictly limited, at the same time that every facility is given for the elimination of the products of nitrogenous waste by the large quantities of hot water drunk in the course of the day, the accumulation of waste in the tissues ought to be most effectually prevented.

Adjuvants to Diuretics.—As the amount of urine secreted depends upon the difference in pressure between the blood in the glomeruli and the urine in the tubules, it is evident that any pressure on the tubules, whether caused by obstruction of the ureter by a calculus, by the mechanical pressure of dropsical accumulations in the abdomen, or by distension of the venous plexus in the kidney itself, will tend to lessen the secretion of urine. Consequently we sometimes find that in such cases diuretics fail to act until the pressure has been relieved by paracentesis in cases of dropsy, or the venous congestion lessened by the use of a brisk purgative, or by cupping over the loins.

If the venous congestion be very great, as in cases of mitral disease or of chronic bronchitis with emphysema and dilated heart, bleeding from the arm may be advantageous or even imperatively necessary. In dilated heart and in mitral incompetence the action of digitalis on the heart itself, strengthening its action and enabling it more effectually to pump the blood out of the venous into the arterial system and thus to reduce venous congestion, will aid its action upon the kidneys.

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Des hôpitaux au point de vue de leur origine et de leur utilité ; des conditions hygiéniques qu'ils doivent présenter et de leur administration. 1852, 1 vol. in-12 (*Épuisé*).

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Les eaux minérales de la France. Guide du médecin-praticien. 1859, 1 vol. in-12. — 2^e édition, 1863.

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PRÉFACE

DE LA TROISIÈME ÉDITION

Le *Monde médical* a rendu justice aux sentiments et aux intentions qui m'avaient animé, et a vu dans le *Traité de l'impuissance et de la stérilité* une œuvre sérieuse, inspirée par la science seule, et de laquelle j'avais le droit de dire, comme Montaigne disait de la sienne: *Ceci est une œuvre de bonne foi.*

De plus, pour qu'il fût réellement une œuvre de bonne foi, ce livre devait encore s'abriter derrière la pudeur de la science, et déjouer ainsi les curiosités malsaines et les espérances de la luxure.

Ces deux conditions de mon programme, j'ai la conscience de les avoir remplies, et de n'être jamais sorti des bornes que m'imposait la langue scientifique.

Mais le public auquel s'adressait ce livre, habitué à la moralité de ses écrivains et à la dignité professionnelle, demandait davantage : il voulait que cette œuvre de bonne foi fût en même temps une œuvre scientifique, c'est-à-dire qu'elle fût l'expression fidèle des connaissances acquises en anatomie, en physiologie, en clinique et en thérapeutique, relativement à la fonction génésiaque.

Quoique le *Traité de l'impuissance et de la stérilité* ait in-

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spiré des thèses doctorales et qu'il ait eu la bonne fortune d'être discuté par tous ceux qui ont abordé le sujet de la génération, j'ai été le premier à reconnaître certaines lacunes et certains défauts inséparables de la coordination de si nombreux documents.

Ma sollicitude a donc été de combler ces lacunes et de remédier à ces défauts, afin de rendre l'ouvrage digne de la faveur avec laquelle il avait été accueilli et de l'estime dont il est entouré.

J'espère y être parvenu.

L'édition que j'offre aujourd'hui au public n'a conservé des éditions précédéntes que les grandes divisions et les lignes principales ; tout le reste a été remanié et refondu ; certaines longueurs ont été supprimées et ont fait place à l'exposition des travaux les plus récents qui, de près ou de loin, touchaient au sujet de mes études ; en un mot, j'ai eu à cœur de ne rien laisser dans l'ombre et de dresser le tableau le plus complet et le plus fidèle de l'état actuel de la science, relativement aux fonctions génitales chez l'homme et chez la femme.

C'est presque un livre nouveau auquel j'ai prodigué tous mes soins.

Puissent la faveur publique et l'estime de mes confrères consacrer ces nouveaux efforts et ne pas s'éloigner d'un livre qui est tout à la fois, je le répète, une œuvre de science et une œuvre de bonne foi.

Félix ROUBAUD.

Paris, le 20 mai 1876

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TRAITÉ
DE L'IMPUISSANCE
ET
DE LA STÉRILITÉ

PHYSIOLOGIE DE L'ESPÈCE

Dans l'acte de la reproduction de l'espèce humaine, les deux sexes jouent un rôle également important, dont le caractère mal apprécié a donné naissance à divers systèmes ou théories dont j'ai fait ailleurs l'histoire (1). Ce rôle, que remplissent des organes propres à la fonction génératrice, s'exécute dans des conditions physiologiques et au milieu de circonstances diverses que j'aurai soin d'exposer en leur place, car les unes et les autres ont une action marquée, non-seulement sur l'énergie de la fonction reproductive, mais encore sur les maladies qui font le sujet de ce livre.

Ces maladies ont été confondues par beaucoup d'auteurs. Les uns, ne voyant que le but final, que le résultat à atteindre, donnent indistinctement le nom d'impuissance ou de stérilité aux états morbides, quels qu'ils soient, qui empêchent la reproduction de l'espèce : pour eux, ces deux mots sont synonymes et désignent exactement le même genre d'affections. Les autres, considérant que, dans l'acte de la génération, le rôle de la femme est en quelque sorte passif, tandis que celui de l'homme est entièrement sous l'empire de la volonté, appellent impuissant l'homme qui ne peut procréer, quelle que soit la cause de cette impossibilité, et nomment stérile la femme qui se trouve dans le même cas.

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(1) Voyez la première édition de cet ouvrage, p. 63 et suiv.

Je ne puis me ranger à aucune de ces deux opinions. La dernière repose sur une distinction grammaticale, inadmissible dans la science; car, sous peine de tomber dans une logomachie inextricable, les mêmes états pathologiques réclament la même dénomination.

L'autre opinion semble, au premier abord, plus sérieuse, par cela même qu'elle paraît plus scientifique ; mais en parcourant le cadre nosologique de l'appareil générateur, on ne tarde pas à se convaincre qu'une plus grande exactitude doit être apportée dans la désignation des divers états qui le remplissent. Qu'on me permette de citer un ou deux exemples à l'appui de cette assertion. Les faits d'occlusion incomplète du vagin permettant la fécondation, et non l'intromission de la verge, ne sont pas rares dans l'histoire de la chirurgie : Riolan, entre autres auteurs, raconte l'histoire d'une femme qui, accusant son mari d'impuissance, fut, à la visite des experts, reconnue enceinte, quoique présentant une occlusion vaginale qui ne permettait pas le coït. Quel nom donner à cet état pathologique? D'après les auteurs dont je combats l'opinion, les mots impuissance et stérilité seraient impropres, puisque le but final est atteint, et pourtant la copulation, cette partie importante de la fonction génératrice, ne peut avoir lieu. — D'autre part, voici deux hommes. Chez l'un, l'érection de la verge est impossible, n'importe par quel motif; impossible, par conséquent, est le coït, et, par conséquent encore, dans la majorité des cas, impossible est, de sa part, toute action fécondante; chez l'autre, l'érection de la verge est pleine et entière, le coït s'accomplit normalement, mais l'action fécondante, par une cause quelconque, ne s'exerce pas : est-il raisonnable de placer ces deux hommes sous la même rubrique nosologique? Pour un même trait dans la physionomie, quelle dissemblance dans les autres, quel éloignement dans les caractères ! ! ! D'un côté, la fonction génératrice tout entière abolie, annihilée, détruite ; avec elle, dépérissement et souvent atrophie des organes génitaux ; avec elle, troubles profonds dans les facultés morales, depuis le simple sentiment de honte jusqu'à la monomanie du suicide, sans parler de l'action délétère que ces troubles exercent sur les principales fonctions de l'organisme. De l'autre côté, abolition incomplète de la faculté génératrice, que n'accompagnent presque jamais des désordres dans les fonctions organiques et dans les facultés morales. L'acte copulateur, dont on ne tient aucun compte, creuse entre ces deux hommes un abîme sans fond. Non, leurs états pathologiques ne sont pas les mêmes ; les symptômes qui les révèlent et les accidents qui les suivent en font des entités distinctes, dont chacune réclame, dans le langage nosologique, une dénomination spéciale.

Cette dénomination ne doit avoir rien d'arbitraire ; elle doit désigner un état exactement limité, parfaitement défini, dont je vais essayer de tracer le cadre.

La fonction de la reproduction se compose, dans les deux sexes, de deux actes tellement distincts, que pour l'exercice de l'un la volonté est forcée d'intervenir, et que cette volonté reste entièrement étrangère à l'accomplissement de l'autre. La première est une fonction animale ou de relation ; la seconde est une fonction organique ou interne, comme aurait dit Bichat. Après le rapprochement de l'homme et de la femme, pour l'exécution duquel la volonté a dû agir, tout, dans l'acte reproducteur, se passe à notre insu, et la génération se fait en dehors de notre conscience.

Cette intervention de la volonté, sans parler du sentiment voluptueux qui accompagne le coït, ne suffit-elle pas pour différencier deux actes d'une même fonction, il est vrai, et ne rend-elle pas légitime la ligne de démarcation à établir entre les états pathologiques qui mettent obstacle à l'accomplissement ou de l'une ou de l'autre? Je l'ai toujours pensé ainsi, et j'estime que le mot *impuissance* doit être donné à tout état morbide qui, chez l'homme ou chez la femme, s'oppose à l'union *physiologique* des deux sexes, c'est-à-dire au coït, et le mot *stérilité* être réservé à tout état morbide qui, chez l'un ou chez l'autre sexe, empêche la reproduction de l'espèce.

Il y a donc, d'après ces considérations que je crois très-légitime :

Une impuissance de l'homme;

Une impuissance de la femme;

Une stérilité de l'homme;

Une stérilité de la femme.

En d'autres termes, les affections qui font le sujet de cet ouvrage se peuvent partager en deux groupes : le premier renferme les troubles de l'acte copulateur chez l'homme et chez la femme; le second présente les conditions morbides qui, dans les deux sexes, empêchent l'acte fécondateur.

Cette distinction n'est point arbitraire; elle a pour base la physiologie de la fonction génitale, et permet seule de bien établir ce qui est du domaine de l'impuissance et ce qui appartient à la stérilité.

CHAPITRE PREMIER

COPULATION

§ I. — Acte copulateur chez l'homme.

La sécrétion spermatique, c'est-à-dire l'acte testiculaire, a une action notable, non-seulement sur les changements que subit la verge dans ses dimensions, mais encore sur l'énergie de l'acte copulateur lui-même. L'exemple des castrats avant la puberté, dont les organes génitaux sont arrêtés dans leur développement, et dont les désirs vénériens et la vigueur virile sont à peu près nuls, ne permet aucun doute à cet égard.

Il serait donc logique de placer ici l'étude physiologique de la liqueur séminale; mais si l'on fait attention que c'est à ce liquide qu'appartient toute la puissance fécondante de l'homme, on comprendra que je réserve son histoire pour le paragraphe assigné à l'acte fécondateur lui-même, et que je me concentre ici dans la seule étude des conditions de la copulation, en admettant comme normale la fonction testiculaire.

Ces conditions sont au nombre de quatre, et si parfaitement distinctes entre elles, malgré leur union intime, par leur ordre de succession et par leurs manifestations, que l'absence de l'une n'entraîne pas fatalement la suspension des autres. Pour l'accomplissement de l'acte physiologique, elles se manifestent dans l'ordre suivant: 1° désirs vénériens; 2° érection de la verge; 3° expulsion d'un liquide spécial; 4° enfin, plaisir au moment de cette évacuation.

Ces circonstances ne sont pas toutes exclusivement affectées au coït; il en est une surtout, l'éjaculation spermatique, qui est tellement essentielle à la fécondation, que je renvoie son histoire physiologique à la partie consacrée à l'examen de l'acte reproducteur proprement dit.

Je n'ai donc dans ce paragraphe qu'à m'occuper des désirs vénériens, de l'érection de la verge et du plaisir.

Les désirs vénériens ont des mobiles nombreux et variés : ils ne sont pas toujours, comme 'on pourrait le croire, sous l'empire de la volonté, car l'instinct qui les éveille chez les animaux à l'époque du rut les excite également chez l'homme; cependant, l'instinct n'a une action bien sensible que dans les premières années de la puberté, ou pendant une longue continence, ou au milieu de la vie calme et retirée des champs.

Plus tard, lorsque l'âge, l'habitude ou la satisfaction des besoins les plus pressants ont calmé les premières ardeurs de l'instinct, les désirs vénériens ne répondent plus qu'à la voix des sensations ou de l'imagination.

Tous les sens ont la puissance de les éveiller. Ceux de la vue, du toucher et de l'ouïe ont une action si directe, qu'on pourrait les appeler les sens de l'amour. L'odorat jouit aussi d'une influence décisive, et la nature a placé dans les organes génitaux de tous les animaux une odeur *sui generis* qui surexcite leur sensualité; certains parfums possèdent le même privilége, et la galanterie sait heureusement les mettre à profit. Le goût lui-même, moins favorisé que les autres sens, éveille parfois aussi l'appétit vénérien : un de mes amis ne pouvait jamais manger de la crème fouettée sans avoir immédiatement quelque idée voluptueuse.

Cependant, malgré la réalité incontestable du pouvoir des sensations sur le développement des désirs vénériens, il faut reconnaître que, dans la majorité des cas, cette puissance est insuffisante, et qu'il lui faut le secours de l'élément moral.

Chez les animaux, c'est l'instinct qui seconde les sensations; chez l'homme, être de raison, c'est la volonté.

La volonté exerce sur le sens génital un empire presque absolu : l'histoire d'Ulysse se bouchant les oreilles pour ne pas se laisser séduire par le chant des sirènes, est une fable poétique en contradiction avec la nature, surtout en ayant égard à l'âge et à l'expérience du roi d'Ithaque. Ne voyons-nous pas tous les jours l'homme, aussi bien que la femme, résister aux séductions les plus provocantes et sortir victorieux d'une lutte où les deux adversaires étaient les sens et l'imagination?

Sans doute, si l'on ne se prémunit pas contre la tentation, les excitations extérieures entraîneront la volonté, car le silence de celle-ci équivaut à son consentement.

Bien plus, la volonté, par sa seule puissance et sans le secours d'aucune sensation, peut évoquer les désirs vénériens. C'est alors qu'elle éveille l'imagination, par qui le passé se ranime et l'avenir se fait réalité; grâce à elle, l'heure présente se peuple de formes indicibles que le regard caresse, que les lèvres embrassent et que les mains saisissent; fantômes gracieux dont l'existence tout à la fois idéale et réelle plonge l'âme et les sens dans l'extase voluptueuse de l'amour le plus complet. Les poëtes, les romanciers, les artistes, tous ceux enfin chez qui l'imaginatian occupe une large place, jouissent de la réputation méritée d'être fort enclins à l'amour; mais ce n'est point à dire qu'ils soient les plus aptes à accomplir l'acte, car nous verrons ailleurs l'influence fâcheuse que les travaux de l'intelligence exercent sur l'énergie virile. Mais tel est l'empire de l'imagination que, par sa seule force, en dehors de l'instinct et de toute sensation, elle peut non-seulement produire l'éréthisme vénérien, mais encore déterminer l'éjaculation spermatique, ainsi qu'il arrivait à un de mes camarades d'études toutes les fois qu'il pensait à sa maîtresse.

Quel qu'ait été le promoteur des désirs vénériens, ceux-ci, une fois éveillés, réagissent sur l'appareil génital, et pendant que, sous leur influence, la sécrétion spermatique augmente d'énergie, la verge subit une métamorphose presque complète, dans laquelle son volume est accru et sa direction entièrement changée.

Cette métamorphose est ce qu'on appelle l'érection, dont je vais essayer d'expliquer le mécanisme.

A l'époque où les esprits animaux étaient considérés comme les moteurs de la machine humaine, on pensait que ces esprits remplissaient la verge, et que les muscles du périnée soutenaient celle-ci et la redressaient comme un bâton retenu par des cordes. Vésale consacra cette opinion en donnant à ses muscles le nom de *erectores penis*, que Winslow changea contre celui d'*ischio-caverneux*, qu'ils portent encore aujourd'hui. R. de Graaf s'éleva contre cette explication qui, malgré ses efforts, continua d'être acceptée par la majorité des anatomistes.

Et cependant, ce savant était sur la voie de la vérité ; le premier il soutint et démontra expérimentalement que l'érection résulte de la présence du sang accumulé dans la verge. Ayant lié le pénis d'un chien à sa racine au moment du coït, il trouva ce corps rempli de sang et le vit revenir à sa flaccidité ordinaire lorsque le liquide en eut été expulsé. De plus, ayant injecté de l'eau par les veines honteuses dans la verge d'un cadavre, il obtint une distension et une érection plus énergiques encore que sur le vivant. Il pressentit aussi que la turgescence des corps caverneux pouvait tenir à un défaut d'équilibre entre la sortie et l'arrivée du liquide sanguin, et il se demanda quels étaient les obstacles qui s'opposaient à l'écoulement du sang veineux. Les muscles ischio-caverneux, dont il avait nié le rôle comme suspenseurs, furent, à ses yeux, les moteurs de cet obstacle. Cependant, les rapports anatomiques ne lui rendant pas suffisamment compte du mécanisme de cette compression, de Graaf avoue que l'action de ces muscles est indirecte.

John Hunter (1) et la majorité des anatomistes du XVIIIᵉ siècle adoptèrent cette opinion, qui est même encore partagée par quelques physiologistes de nos jours ; mais alors, comme aujourd'hui, on ne s'accordait pas sur l'obstacle qui s'opposait à la sortie du sang veineux.

Mercier prétendait en trouver l'explication dans les dispositions anatomiques des veines de la verge, qui, selon lui, se rendent *toutes* aux sinus de Santorini, lesquels sinus, en allant rejoindre les veines hypogastriques, forment des plexus nombreux, surtout aux faces latérales de la prostate, et que là ces sinus se trouvent comprimés pendant la contraction des muscles pelviens. Cette explication est inadmissible, comme le fait judicieusement remarquer M. Debrou ; car s'il en était ainsi, les malades affectés de rétention d'urine ou d'hypertrophie de la prostate devraient être tourmentés par des érections continuelles, ce qui n'a point encore été noté parmi les symptômes de ces états pathologiques.

M. Debrou, qui se range du côté de Vésale, en ce qui regarde l'action des muscles ischio-caverneux, adresse aux partisans de la stase du sang dans la verge une objection générale qui a beaucoup perdu de son importance depuis les recherches ultérieures, mais qui mérite cependant de trouver place ici : « Je reconnaîtrai, dit-il, que tous les auteurs qui adoptent l'une des nuances de cette doctrine admettent implicitement, sinon formellement, que l'obstacle à la sortie du sang veineux n'est que partiel et incomplet, car autrement la gangrène du pénis serait la suite inévitable d'une stase indéfinie du sang. Mais même avec cette réserve, qui est de toute nécessité, il y a des difficultés qui sont inconciliables avec la théorie ; celle-ci, par exemple : Au commencement de l'érection, il est possible que tout le sang artériel apporté ne s'échappe point par les veines ;

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(1) John Hunter, *Œuvres*, traduction G. Richelot. Paris, 1845.

mais si l'érection persiste et dure longtemps, plusieurs heures, ainsi qu'on l'a vu dans certains cas de satyriasis, il faut bien qu'autant de sang sorte qu'il en entre, puisque la gangrène ne survient point. Or, si autant de sang sort qu'il en entre dans l'érection prolongée, comment admettre qu'il n'en est pas ainsi dans la turgescence ordinaire ? »

J. Müller (1) a voulu faire jouer un rôle important aux capillaires artériels, répandus dans les corps caverneux, en les présentant comme constitués par de petits renflements contournés en forme de diverticules clos, et qu'il appelle *artères hélicines ;* mais on est loin d'être d'accord sur l'existence et les rapports de ces dilatations artérielles, et l'on recule devant une théorie fondée sur des bases que contestent des hommes tels que Valentin, Kraüse et Huschke.

P. Bérard, professeur de physiologie à la Faculté de Paris, se fondant sur des dispositions anatomiques notées par Müller, Valentin, Hunter et Stanley, a émis, dans ses leçons orales, une opinion d'après laquelle il existerait, dans les parois des vacuoles, des fibres contractiles sur lesquelles reposerait le mécanisme de l'érection.

Enfin, et pour en finir, Chaussier et Adelon rapportent la turgescence de la verge à une propriété *sui generis* dont est doué le tissu érectile, et qu'ils appellent *érectilité.* Cette manière de se tirer d'embarras est renouvelée des anciens, qui, pour expliquer la génération, admettaient une faculté génératrice inhérente à la matrice.

De toutes ces théories dont nous aurions pu facilement augmenter le nombre, il ressort que la plus vraisemblable, celle du moins qui se rapproche le plus de la vérité, est la théorie qui attribue l'érection à la compression des veines chargées de ramener le sang des organes érectiles, sans qu'elle aille jusqu'à l'oblitération complète des vaisseaux.

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(1) *Encyclop. Wörterbuch der mediz. Wissenschaften :* ERECTILE-GEWEBE, — *Manuel de physiologie.* Paris, 1851, t. I, p. 181.

Cette compression est amenée tout à la fois par la membrane musculaire que possèdent les parois veineuses, par les muscles lisses que traversent ces veines avant de rentrer dans le bassin, par l'enveloppe musculaire qui double la peau du pénis, et enfin par les muscles ischio-caverneux qui entourent les racines des corps caverneux et par le bulbo-caverneux qui embrasse le bulbe.

D'un autre côté, sous l'influence de l'excitation cérébrale, déterminée par l'érotisme, les fibres musculaires qui se trouvent dans les parois des alvéoles qui composent les tissus érectiles sont frappées d'une sorte de paralysie, analogue aux paralysies vaso-motrices si bien décrites par M. Claude Bernard, et permettant aux alvéoles de se dilater et de se remplir de sang. La face, en se colorant et en se congestionnant sous l'influence d'une émotion quelconque, nous donne le spectacle de ce qui se passe dans les tissus érectiles de la verge, sous l'empire de l'excitation érotique.

Enfin les artères elles-mêmes, d'après les recherches les plus récentes, prennent également part au mécanisme de l'érection. D'un calibre mince et peu perméable à l'état de repos, les artères, au moment de l'érection, donnent passage à une quantité de sang assez considérable, soit qu'elles soient frappées d'une paralysie vaso-motrice identique avec celle que nous venons de signaler dans les alvéoles des organes caverneux et spongieux, soit, au contraire, qu'elles se trouvent animées de mouvements vermiculaires qui poussent le sang et l'accumulent dans les aréoles spongieuses où il se déverse.

De ces données, basées sur les derniers travaux de la physiologie, il résulte, ce qui est réellement vrai, que l'érection commence toujours par la base de la verge, là où arrivent les artères qui portent le sang dans les aréoles du tissu spongieux. En même temps que se produit la paralysie vaso-motrice de ces aréoles et de ces artères, les fibres musculaires des veines et des plans musculeux que celles-ci traversent se contractent et opposent un premier obstacle au retour du sang. Puis les muscles ischio-caverneux et bulbo-caverneux entrent en action et chassent le sang vers l'extrémité opposée et amènent ainsi le gland au plus haut degré de turgescence et de rigidité.

A ce point congestionné, le système nerveux du gland acquiert une sensibilité énorme et se trouve ainsi admirablement disposé pour devenir le siége des voluptés que la nature a attachées à l'acte de la copulation.

§ II. — Acte copulateur chez la femme.

Chez l'homme le coït n'est complet qu'à la condition d'un sentiment voluptueux pendant l'éjaculation spermatique ; de même chez la femme, la copulation n'est entière que lorsque le plaisir accompagne l'approche du mâle.

Sans doute plus favorisée que l'homme, la femme, en dehors de quelques vices de conformation et de quelques cas pathologiques que je ferai connaître ailleurs, peut toujours, du moins passivement, se prêter au rapprochement des sexes ; mais si son sens génital n'est pas tiré de sa torpeur, si sa sensibilité reste étrangère à l'acte, si, en un mot, l'orgasme vénérien n'a pas porté le trouble dans son organisme, l'action copulatrice est physiologiquement incomplète, aussi incomplète que si le membre viril se contentait d'exciter le clitoris, sans pénétrer dans la cavité vaginale.

J'aurai donc à examiner la copulation chez la femme au double point de vue :

1° Du rôle que jouent ses organes dans leurs rapports avec ceux de l'homme ;

2° De la volupté qui chez elle, comme chez l'homme, complète l'acte copulateur.

L'intromission de la verge dans le vagin n'impose à la femme qu'un rôle entièrement passif ; la conformation de ses organes la dispense sous ce rapport de toute préparation antérieure, et pour accomplir cette partie de l'acte, elle n'a besoin ni d'excitation vénérienne, ni de désirs érotiques ; il suffit que sa volonté s'efface et livre sans opposition l'appareil copulateur.

Mais il n'en est pas de même pour la volupté qu'elle doit trouver dans le coït ; ici sa volonté, à défaut de l'instinct, est nécessaire pour faire naître les désirs vénériens et rendre le plaisir à la fois plus vif et plus complet ; ensuite ce plaisir est, comme chez l'homme, le résultat d'un mécanisme dont les troubles correspondent à des états morbides qui devront m'occuper plus tard.

Je dois donc ici, à l'exemple de ce que j'ai fait pour l'homme, examiner ce mécanisme au repos et en activité.

L'appareil sensuel chez la femme est analogue à celui de l'homme, et le mécanisme de l'un est entièrement identique avec celui de l'autre.

Le gland du clitoris, la partie la plus sensible de tout l'appareil, est mis en relation avec les deux bulbes au moyen d'un réseau veineux appelé réseau intermédiaire.

Les deux bulbes du vestibule, placés sur les parties latérales de l'entrée du vagin, sous les branches de l'arcade pubienne, ont non-seulement la même fonction que le bulbe de l'homme, mais encore ils activent la copulation en resserrant l'entrée vaginale, et par conséquent en comprimant la verge.

Ce double effet est obtenu au moyen du muscle *constrictor cunni*, qui, malgré la confusion dans laquelle sont tombés beaucoup d'anatomistes, est l'analogue du muscle bulbo-caverneux chez l'homme.

Je ne reviendrai pas ici sur le mécanisme de l'érection qui m'a occupé dans le paragraphe précédent ; il est exactement le même chez la femme ; seulement je dois ne pas laisser dans l'ombre une circonstance heureuse pour le développement de la volupté chez elle, circonstance depuis longtemps signalée par Lieutaud, quand il disait : « Le clitoris n'a point la direction de la verge ; il se porte dans un sens contraire, c'est-à-dire de haut en bas, sans qu'il puisse se relever dans son action (1). » Cette direction du clitoris, déterminée par les éléments anatomiques qui l'entourent, en déjetant son gland au devant du rebord supérieur de l'entrée vaginale, augmente les frottements que la verge est appelée à exercer sur l'organe le plus sensible de l'appareil génital chez la femme, et accroît par conséquent chez elle la somme des voluptés qui lui est dévolue.

Le vagin, quoique moins bien doté que l'appareil dont je viens de parler, est cependant pourvu d'un tissu érectile qui rampe dans toute sa longueur, entre les diverses membranes qui le constituent. La partie la plus étroite de ce conduit se trouve à l'entrée, circonstance remarquable au point de vue du plaisir chez l'homme et chez la femme. Enfin, la volupté de cette dernière est encore augmentée par la présence des poils qui garnissent le mont de Vénus, et dont l'influence sur la sensibilité de cette partie n'avait pas échappé à Carus (2).

§ III. — Copulation.

Après avoir établi, dans les deux paragraphes précédents, le mécanisme au moyen duquel chaque sexe est rendu capable d'accomplir physiologiquement l'acte de la copulation, il nous faut maintenant assister à leur rapprochement et nous rendre compte des phénomènes locaux et généraux qui accompagnent, chez l'homme et chez la femme, cette mise en commun de leur orgasme vénérien.

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(1) Lieutaud, *Essais anatomiques*, vol. II, p. 310.

(2) Carus, *Physiologie*, vol. III, p. 55.

Étudié dans la sphère des organes copulateurs, c'est-à-dire examiné dans les phénomènes purement locaux, le coït ne peut avoir lieu qu'après une période de préparation pendant laquelle les organes des deux sexes entrent en érection sous l'influence de l'éréthisme vénérien. Quand le membre viril pénètre dans le vestibule, le gland du pénis vient heurter le gland du clitoris qui, placé à l'entrée du canal copulateur, peut céder et se fléchir à la faveur de sa position et de l'angle que fait son corps. Après cette première excitation des deux foyers sensitifs, le gland pénien glisse sur le rebord des deux bulbes, par un mouvement brusque et saccadé ; le collet et le corps du pénis sont embrassés par la saillie de ces bulbes ; le gland, au contraire, qui s'est avancé plus loin, est en contact avec la surface fine et délicate de la muqueuse vaginale, rendue elle-même élastique par la doublure que lui constitue le tissu érectile que j'ai dit ramper entre ses membranes. Cette disposition, en permettant au vagin de se mouler sur le volume de la verge, augmente encore la turgescence, et par conséquent la sensibilité du clitoris, en forçant le sang, chassé des parois du vagin, de se rendre, en partie du moins, aux bulbes du vestibule, à travers les veines émissaires dépourvues de valvules, et de parvenir ainsi, d'une manière médiate et directe, jusqu'au clitoris. A son tour, la turgescence, et par conséquent la sensibilité du gland pénien est accrue par l'action compressive du tissu vaginal de plus en plus turgescent et par celle des deux bulbes du vestibule.

De plus, le clitoris, abaissé fortement et porté à la rencontre de la face dorsale du gland et du corps de la verge, par la portion antérieure du muscle compresseur, subit de la part du pénis et lui inflige à son tour des frottements voluptueux, de sorte que chaque mouvement de copulation influe à la fois sur les deux sexes, et concourt, au point culminant de cette excitation mutuelle et réciproque, à amener d'un côté l'éjaculation et de l'autre la réception de la liqueur séminale dans l'ouverture *béante* du col de la matrice.

On s'est demandé — et beaucoup de sérieux esprits ont abordé ce problème — auquel de l'homme ou de la femme revenait la plus grande somme de jouissance dans ces moments de suprême ivresse. Comme toutes les questions reposant sur des bases essentiellement variables et relatives, celle-ci a reçu les solutions les plus contraires; en présence, en effet, de toutes les circonstances qui influent sur le sens génital, je ne sais s'il est possible de résoudre *à priori* un semblable problème.

Plus tard, lorsque j'étudierai l'influence du tempérament, de la constitution et d'une foule de circonstances tant particulières que générales sur le sens génésique, on se convaincra que, si la question de la différence de volupté entre les deux sexes n'a pas encore reçu une solution convenable, on se convaincra, dis-je, que la question est insoluble au milieu de toutes les conditions diverses dont on ne peut faire une abstraction entière; et cela est si vrai, qu'il est très-difficile de dresser le tableau exact et complet des phénomènes généraux qui accompagnent le coït : tandis que chez l'un la volupté se traduit par quelques tressaillements à peine sensibles, elle atteint chez l'autre le paroxysme de l'exaltation tant morale que physique. Les nuances, entre ces deux états extrêmes, sont infinies : la circulation s'accélère, les artères battent fortement; le sang veineux, arrêté dans les vaisseaux par la contraction des muscles, augmente la chaleur générale, et cette stagnation, plus prononcée au cerveau par la contraction des muscles du cou et le renversement de la tête en arrière, détermine une congestion cérébrale momentanée, pendant laquelle l'intelligence se perd et toutes les facultés s'anéantissent. Les yeux, violemment injectés, deviennent hagards et rendent le regard incertain, ou, comme dans la majorité des cas, se ferment spasmodiquement pour éviter le contact de la lumière.

La respiration, haletante et entrecoupée chez quelques-uns, se suspend chez quelques autres par la contraction spasmodique du larynx, et l'air, quelque temps comprimé, se fait enfin jour au dehors, à travers des paroles sans suite et des mots inconnus.

Les centres nerveux, congestionnés, comme je le disais tout à l'heure, ne communiquent plus que des volitions confuses : la motilité et la sensibilité accusent un désordre inexprimable ; les membres, saisis de convulsions et quelquefois de crampes, s'agitent dans tous les sens, ou se tendent et se roidissent comme des barres de fer ; les mâchoires, serrées l'une contre l'autre, font grincer les dents, et quelques personnes portent le délire érotique si loin, qu'oubliant le compagnon de leurs voluptés, elles mordent jusqu'au sang une épaule qu'on a l'imprudence de leur abandonner.

Cet état frénétique, cette épilepsie et ce délire durent peu d'ordinaire ; ils suffisent cependant pour épuiser les forces de l'organisme, surtout chez l'homme où cette surexcitation se termine par une évacuation de sperme plus ou moins abondante. Une prostration arrive alors, et d'autant plus forte que l'éréthisme a été plus violent. Cet abattement subit, cette faiblesse générale et cette tendance au sommeil qui s'emparent de l'homme après la consommation de l'acte, sont dus en partie à l'émission de la liqueur séminale, car la femme, quelque énergie qu'elle ait apportée dans le coït, n'éprouve qu'une lassitude passagère, incomparablement inférieure à la prostration de l'homme, et qui lui permet bien plus rapidement qu'à ce dernier la répétition de l'acte. « *Triste est omne animal post coïtum, præter mulierem gallumque,* » a dit Galien, je crois, et cet axiome est essentiellement vrai pour l'espèce humaine.

A partir de ce moment, la fonction génératrice échappe à notre conscience; le rôle de l'homme est fini, celui de la femme commence à devenir réellement actif. Mais tout au début se passe encore à son insu; ce ne sera que plus tard, alors que la formation mystérieuse d'un nouvel être sera consommée, qu'elle acquerra la connaissance des droits et des devoirs nouveaux qui lui sont dévolus par la nature. Mais, pour la formation de ce nouvel être, l'homme et la femme n'ont rempli qu'une bien faible partie de leurs obligations par le coït que je viens de décrire, car la mission principale de l'un est le dépôt, dans les organes de l'autre, d'une liqueur prolifique, sans laquelle la reproduction est impossible.

Nous allons donc étudier cette seconde partie de la fonction génitale, tant chez l'homme que chez la femme, et compléter ainsi ce qu'on appelle dans la science la *physiologie de l'espèce.*

CHAPITRE II

FÉCONDATION

§ I. — Acte séminal.

Avant de faire connaître la composition du sperme, et le rôle que joue chacun de ses éléments dans l'acte de la fécondation, il me semble plus rationnel d'assister d'abord à sa sécrétion et à sa translation depuis le testicule jusqu'au canal de l'urèthre, et de ne nous occuper de lui que lorsque nous serons parvenus à l'amener au dehors à travers tous les obstacles dont sa marche est semée.

Nous aurons donc à examiner le sperme aux points de vue : 1° de sa sécrétion ; 2° de son excrétion ; 3° de sa composition.

A. — *Sécrétion du sperme.*

Le testicule est composé d'éléments tubulés qui se terminent tantôt en cul-de-sac, tantôt par des anastomoses des conduits entre eux. La disposition anatomique des conduits séminifères permet de penser que la sécrétion se fait dans toute leur étendue, et que la quantité de cette sécrétion est très-minime, si l'on a égard au petit volume de ces glandes, au nombre et à la ténuité des conduits séminifères, au peu de sang qu'y apportent les artères spermatiques où la circulation est ralentie, et à la longueur et à l'étroitesse des canaux déférents. Cette quantité paraîtra encore plus faible, si l'on se rappelle que, chemin faisant, une foule de glandes viennent mélanger leurs produits à la liqueur testiculaire. Cependant la sécrétion spermatique est accrue dans certaines circonstances, comme, par exemple, sous l'influence des excitations vénériennes, de certains aliments ou de certaines substances.

L'appareil sécrétoire du testicule ne laisse aucun doute sur sa tendance à opérer un mélange intime du sperme ; sans parler des anastomoses qui s'établissent à l'extrémité des conduits, les canalicules contournés, lorsqu'ils sont arrivés à une ou deux lignes de distance du réseau du testicule, cessent d'être flexueux ; plusieurs s'unissent ensemble et forment les *canalicules séminifères droits*, qui sont au nombre de plus de vingt. Ces conduits s'anastomosent ensuite en réseau, et, en traversant l'albuginée, forment le réseau de

Haller où le sperme se mélange encore. De l'extrémité supérieure du réseau de Haller partent, à travers l'albuginée, des canalicules un peu moins nombreux que les canalicules droits ; on les nomme *conduits spermatiques efférents*, et l'on en compte ordinairement neuf; chacun de ces canaux, en se contournant, forme un cône et va toujours en diminuant de calibre du côté de l'épididyme, sans présenter des valvules, comme le croyait Prochaska.

La force qui fait circuler le sperme dans cette partie du trajet qu'il doit parcourir ne peut être que la *vis à tergo ;* car les parois des conduits n'offrent pas d'éléments susceptibles de contractions ; il est également présumable qu'il y a, en même temps, un effet de capillarité, puisque le sperme chemine contre les lois de la pesanteur. Dans tous les cas, sa marche est excessivement lente, pour permettre, avant son émission, aux animalcules dont plus loin nous dirons l'origine, de parcourir toutes les phases de leur développement.

B. — *Excrétion du sperme.*

Je partagerai en deux étapes la route que parcourt le sperme depuis le testicule jusqu'au dehors. La première comprendra l'espace compris entre l'épididyme et les vésicules séminales, et la seconde depuis ces dernières jusqu'à la sortie de la liqueur prolifique par le canal de l'urèthre.

1° Pour se rendre du testicule dans les vésicules séminales, le sperme traverse l'épididyme et le canal déférent. Dans l'épididyme il parcourt des canaux flexueux, très-rapprochés les uns des autres, et dont la longueur est quarante fois plus grande que celle de l'épididyme. Dans le canal déférent, qui fait suite à l'épididyme, le sperme ne parcourt plus qu'un conduit sans flexuosités, mais qui s'élève jusqu'à l'anneau inguinal, où il forme une anse, dont la convexité regarde en haut; puis il descend, en abandonnant la paroi antérieure du bassin, vers le bord latéral de la vessie; se rapproche beaucoup, surtout à la partie postérièure de la prostate, de celui du côté opposé, et finit par se jeter, presque verticalement, dans le bord interne de la vésicule séminale.

En parcourant le long trajet que je viens de décrire, le sperme rencontre à sa marche des obstacles multiples : c'est d'abord le réseau de Haller; plus loin, c'est l'épididyme avec ses mille flexuosités; plus loin encore, c'est le canal déférent dont la longueur est si considérable et le calibre si étroit que la viscosité du liquide y donne souvent naissance à des obstructions; je montrerai plus tard avec quelle facilité les canaux de l'épididyme s'oblitèrent sous l'influence de certaines maladies, oblitérations qui déterminent fatalement alors la stérilité.

Pour vaincre les obstacles que je viens d'énumérer, la nature recourt à trois forces : 1° la capillarité; 2° la *vis à tergo*, qui est tellement considérable, que, si à l'époque du rut, on lie le canal déférent, celui-ci se rompt au-dessous de la ligature; 3° la force élastique des parois du conduit, dépendante d'une tunique musculeuse d'un jaune brunâtre, composée, d'après Leeuwenhoeck, J.-F. Meckel, Cowper, E.-H. Weber, Huschke, de fibres longitudinales et de fibres circulaires. D'après ce dernier auteur, ces fibres seraient surtout de nature élastique, et cette tunique devrait plutôt à son élasticité qu'à sa contractilité musculaire la propriété de contribuer à la propulsion du sperme.

D'autres forces secondaires contribuent encore à la marche du fluide prolifique, entre autres, les contractions alternatives du crémaster, le décubitus horizontal, les mouvements d'élévation et d'abaissement du testicule correspondant à la respiration, etc., etc.

2° La seconde étape, qui marque la fin du trajet que parcourt le sperme pour arriver au dehors, est remplie par les vésicules séminales, les canaux éjaculateurs et le canal de l'urèthre, auxquels sont annexés la prostate, les glandes de Méry ou de Cowper et les follicules de Littre.

Il importe ici de nous arrêter un instant à chacun de ces organes, et d'étudier leur mécanisme d'une manière toute spéciale.

Vésicules séminales. — Le rôle des vésicules séminales n'est pas le même pour tous les auteurs. Les uns en ont fait des glandes, et les autres les ont considérées exclusivement comme les réservoirs du sperme.

Ceux qui ont soutenu que les vésicules séminales étaient des glandes sont : Th. Wharton, Dehorne, Swammerdam, Harder, Dam. Tauvry, R. Wagner; mais c'est à Hunter (1), surtout, que cette opinion doit son éclat. Les arguments sur lesquels il se fonde sont : 1° La présence dans les vésicules séminales d'un liquide différent de celui qui se trouve dans le canal spermatique; 2° l'identité des liquides contenus dans les deux vésicules séminales d'un homme ayant depuis longtemps perdu un testicule; 3° l'existence, chez certains animaux, d'un conduit spécial de la vésicule, qui ne s'abouche pas avec le canal déférent; 4° la présence de liquide dans les vésicules séminales de personnes faibles et de vieillards, et des autres individus après le coït; 5° enfin, une douleur testiculaire après des excitations vénériennes, sans consommation de l'acte : preuve évidente, dit Hunter, que ce qui est fourni dans la copulation vient du testicule, et qu'il n'y a pas de réservoir pour le liquide qui devait être éjaculé.

L'opinion contraire, c'est-à-dire celle qui veut que les vésicules séminales soient exclusivement des réservoirs du sperme, a pour défenseurs : Rondelet, Fallope, qui découvrit ces organes chez l'homme; de Graaf, Sœmmerring, Brugnonne, J.-F. Meckel, Prévost et Dumas, Burdach, Panizza, E.-L.-F. Weber, Gurlt et J. Davy.

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(1) *Œuvres* de J. Hunter, trad. par Richelot. Paris, 1843, t. IV, p. 82.

L'une et l'autre de ces deux manières de voir sont trop exclusives. Les vésicules séminales sont tout à la fois des glandes et des réservoirs : elles sont des glandes parce que l'anatomie montre des follicules nombreux dans leur membrane muqueuse, et parce que les observations de Hunter sont exactes et parfaitement concluantes en faveur de cette opinion; mais elles sont aussi des réservoirs du sperme, parce qu'une injection poussée par le canal déférent arrive jusqu'à elles, parce que le liquide qu'elles renferment présente au microscope des animalcules spermatiques, ainsi que l'ont attesté Baer, Valentin, Weber, etc.

Enfin, des recherches d'anatomie pathologique, entreprises par M. Gosselin, à l'occasion de l'oblitération des épididymes consécutive à l'inflammation de ces organes, ne laissent aucun doute sur le double rôle assigné aux vésicules séminales. Qu'on me permette de reproduire ici les conclusions physiologiques que cet expérimentateur tire de ses recherches, sur lesquelles je reviendrai ailleurs quand j'étudierai les causes de la stérilité : « On conjecture bien, dit-il, depuis les travaux de Hunter, que celui (le liquide) qui vient des testicules est peu abondant, et que la plus grande quantité provient des vésicules séminales, qui ont reçu en dépôt, depuis un temps plus ou moins long, le produit testiculaire. Mes observations me paraissent démontrer que cette conjecture est une réalité, et même que la quantité de liquide testiculaire est encore plus faible qu'on n'est disposé à le croire. On y remarque, en effet, deux phénomènes capitaux : 1° les éjaculations sont aussi abondantes, malgré l'oblitération des voies spermatiques, que dans les cas où ces dernières sont libres;

2° la distention du canal épididymaire par le sperme ne donne pas à ce canal des proportions très-considérables, et n'occasionne pas de souffrances sur le vivant. Sans doute, il se fait une résorption ; mais si la sécrétion testiculaire était aussi active qu'on le suppose généralement, cette résorption ne serait pas assez rapide pour empêcher si complétement les effets de la distention. Il ressort de ces deux points que la quantité habituellement fournie par les testicules est très-faible, quoiqu'elle soit la plus importante. . . . . . .
. . . Quant à la composition du liquide éjaculé, il résulte de mes observations que, dans les cas d'oblitération, il a la même couleur, la même odeur, la même consistance qu'à l'état normal ; la seule différence est donnée par l'examen microscopique, qui démontre l'absence des spermatozoïdes dans un cas, leur présence dans l'autre. Il est donc permis d'établir que, normalement, le testicule ne donne pas autre chose au produit de l'éjaculation que la substance fécondante, caractérisée par les animalcules, et que les matériaux au milieu desquels ceux-ci sont plongés se développent et vivent, proviennent surtout des vésicules séminales. C'est au produit de ces dernières que le sperme doit, en réalité, sa couleur, son odeur et toutes les substances que l'analyse chimique y fait découvrir (1). »

Quoi qu'il en soit, le rôle que jouent les vésicules séminales dans l'éjaculation spermatique est identique avec celui de la vésicule biliaire dans l'excrétion du produit fourni par le foie. Le réservoir spermatique se contracte d'une manière lente et chasse le liquide qu'il contient dans les canaux éjaculateurs. Cette contraction est effectuée au moyen d'une couche de tissu musculaire qui entre dans la composition de ses parois, et qui, appartenant à la vie organique, ne se contracte pas d'une manière brusque et saccadée comme les fibres d'un muscle de la vie animale. Pressé de toutes parts, le liquide ne peut refluer dans le canal déférent à cause du sperme qui y arrive en plus grande abondance, et est forcé de s'échapper par l'ouverture postérieure des canaux éjaculateurs admirablement disposée pour cet effet.

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(1) Gosselin, *Archives générales de médecine*, septembre 1853.

Canaux éjaculateurs. — Il résulte de la disposition anatomique des conduits éjaculateurs, ainsi que de l'étroitesse de leur diamètre et de la direction oblique de leur orifice, que dans l'état de tranquillité et de santé, ces parties éprouvent une compression assez forte pour empêcher le sperme de couler des vésicules séminales dans l'urèthre ; mais lorsque le sperme les a pénétrés, ils doivent, au moyen de la contraction de leurs fibres, contribuer à favoriser sa marche vers le canal de l'urèthre.

Canal de l'urèthre. — Grâce au réseau veineux qui entoure sa muqueuse et qui constitue le corps spongieux, le canal de l'urèthre se trouve largement ouvert dans toute sa longueur pendant la turgescence du membre, et, par conséquent, admirablement disposé pour donner un libre passage à la liqueur prolifique.

Mais son rôle n'est pas entièrement passif : il s'accomplit du côté de la prostate, sur le *verumontanum* même, un phénomène curieux de turgescence qui empêche tout à la fois le sperme de tomber dans la vessie et l'urine de sortir de son réservoir.

Après avoir franchi les deux ouvertures antérieures des conduits éjaculateurs qui s'ouvrent, ainsi qu'on le sait, sur les parties latérales et antérieures du *verumontanum*, et avoir pénétré dans le canal de l'urèthre, le sperme s'accumule-t-il dans ce canal ou en est-il chassé immédiatement? On n'a pas craint d'avancer que le bulbe n'était autre chose qu'un réservoir dans lequel s'amoncelait le sperme pendant la copulation, pour être lancé tout à coup en saccades par les contractions du muscle bulbo-caverneux. Cette opinion de l'élargissement de la portion bulbeuse du canal de l'urèthre est contredite par un examen de M. Kolbelt, qui a pris l'empreinte exacte de la lumière du canal; l'élargissement qui se fait à partir de la portion membraneuse a lieu d'une manière régulière, continue, et c'est par la seule présence du sperme dans le bulbe que les muscles de l'urèthre se contractent et chassent en avant la liqueur prolifique.

Mais on se demande alors s'il n'y a pas une espèce de contradiction entre la ténuité des canaux éjaculateurs et la quantité assez considérable de liquide chassé par l'éjaculation. Sans doute, l'objection aurait quelque gravité, si l'on ne savait que la plus grande partie du liquide éjaculé n'est pas de la semence, et n'est autre chose que le produit de différentes sécrétions glandulaires dont je vais maintenant parler.

Le fluide prostatique est un liquide filant, transparent, hyalin, qui se mêle au sperme au moment de son émission, et lui donne la couleur laiteuse qu'il présente. Cela est si vrai que le sperme, privé de fluide prostatique, est grisâtre, comme on peut s'en assurer en examinant le liquide des dernières éjaculations, quand celles-ci ont été abondantes et répétées.

Un autre liquide, sécrété par les glandes de Cowper ou de Méry, vient également se mêler au sperme. D'après Kraüse, il est filant, clair, visqueux; il contient quelques flocons dans lesquels sont amassées des granulations de 1/900ᵉ à 1/370ᵉ; il a, par conséquent, une grande analogie avec le fluide prostatique. « De même que le fluide prostatique fraie la voie au sperme dans les portions prostatique et membraneuse, dit Huschke, de même le liquide des glandes de Cowper les garantit de l'urine qui pourrait être restée dans les portions bulbeuse et spongieuse du canal. »

Les follicules de Littre et de Morgagni sécrètent à leur tour un liquide qui lubrifie les parois du canal et se mêle aussi au sperme.

Parvenu dans la portion membraneuse du canal de l'urèthre où il est déjà mélangé avec les divers liquides que je viens d'énumérer, le sperme s'échappe au dehors par saccades, comme chassé par les contractions alternatives d'un muscle. — Ce muscle existe-t-il réellement?

Pendant longtemps on a fait jouer ce rôle au muscle bulbo-caverneux; mais tant d'objections, dont la principale est tirée de sa position au-devant de la portion prostatique de l'urèthre où s'accumule la liqueur prolifique lancée par les vésicules séminales et les canaux éjaculateurs, tant d'objections, disons-nous, s'élèvent contre l'intervention de ce muscle dans le phénomène de l'éjaculation, que d'autres anatomistes, Cuvier et Kobelt, entre autres, rapportent cette action à la couche musculaire qui, chez tous les animaux, entoure la portion membraneuse de l'urèthre, et que l'on appelle le *muscle de Wilson*. C'est un véritable sphincter, fixé aux deux branches du pubis, et dont les contractions et les dilatations successives, sous l'empire de l'orgasme vénérien, retiennent ou projettent le fluide séminal et produisent ainsi ces alternatives qui constituent le phénomène de l'éjaculation.

Cuvier, qui a étudié dans toute la série animale la couche musculaire qui entoure la portion membraneuse de l'urèthre et que nous nommons aujourd'hui le muscle de Wilson, s'exprime ainsi à son sujet : « On prévoit qu'elle doit avoir pour usage, en contractant la première portion du canal de l'urèthre, d'en expulser la semence et de servir ainsi à l'éjaculation : voilà pourquoi, sans doute, elle est si épaisse dans les animaux dont la verge est fort longue, tels que les ruminants, etc., et dans ceux qui ont ce même organe fort court, tels que les chats. Dans le premier cas, il fallait une grande force pour chasser la semence à travers un si long canal ; il en fallait une également très-grande dans le second, afin que ce liquide, qui n'aurait pas été porté assez avant par cette courte verge, fût lancé loin de cet organe, jusqu'au lieu où il doit atteindre (1). »

C. — *Composition du sperme.*

Le sperme est un liquide épais, filant, d'une couleur blanchâtre, plus pesant que l'eau, d'une odeur spéciale, *sui generis*, d'une réaction légèrement alcaline, qui est due peut-être au fluide prostatique, soluble dans l'eau et les acides, coagulable par l'alcool. Abandonné à lui-même, il laisse déposer de prismes à quatre pans, terminés par de longues pyramides quadrangulaires et groupés en étoiles, qui sont du phosphate calcaire et du phosphate ammoniaco-magnésien. Ensuite il se dessèche en une lamelle jaune fendillée, insoluble dans l'eau, et répand une odeur de corne brûlée. Il a donné à l'analyse chimique de Vauquelin :

Eau	900
Mucilage animal	60
Soude	10
Phosphate de chaux	30

L'examen microscopique a fourni des résultats plus rigoureux que l'analyse chimique, il a fait constater dans le sperme: 1° une partie fluide; 2° des globules analogues aux globules muqueux ; 3° des granules élémentaires ; 4° et par-dessus tout une innombrable quantité de corpuscules mouvants, filiformes, que l'on appelle *spermatozoïdes*, *zoospermes*, *animalcules spermatiques*, etc., etc.

Je ne m'occuperai ici que des spermatozoïdes qui constituent la partie réellement fécondante de la liqueur séminale.

Les spermatozoïdes ont été découverts, en août 1677, par un jeune étudiant allemand, Louis Hamm. Leeuwenhoeck, à qui ils furent montrés, en fit l'objet de ses études, et peu de temps après, Hartsœker les décrivit pour la première fois dans le *Journal des savants*. Ils se rencontrent chez tous les animaux à l'époque du rut, et n'apparaissent chez l'homme qu'à l'âge où s'établit la fonction génératrice. Ceux de l'homme, comme ceux d'un très-grand nombre d'animaux, présentent une partie renflée à laquelle on a donné le nom de *corps* ou de *tête*, et un filament que l'on désigne sous le nom de *queue*; la tête est ovoïde et un peu aplatie; la queue, faisant suite à la grosse extrémité du corps, est assez épaisse à son origine, s'amincit peu à peu et se termine par un filament très-délié. A un grossissement de 300 ou 400 fois, on voit que leur longueur totale est de 1/20^e de millimètre, et que le grand diamètre de leur tête est de 1/200^e à 1/300^e de millimètre.

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(1) G. Cuvier, *Anatomie comparée*, vol. V, p. 78.

Quand on les observe au microscope, les animalcules spermatiques se font surtout remarquer par la rapidité et la nature de leurs mouvements : ils ne suivent aucune direction déterminée; ils vont en avant, reviennent en arrière, plongent au fond du liquide ou arrivent à sa surface, se heurtent, se croisent entre eux, passent entre les lamelles épithéliales ou les globules muqueux qui les environnent; en un mot, ils semblent obéir à une impulsion volontaire. D'après Henle, ils peuvent parcourir un espace de 2 centimètres en sept ou huit minutes. Ce mouvement, qui paraît être produit par les ondulations de l'animal, cesse après quelques instants, sous l'influence du froid, d'une température élevée ou du desséchement; mais en dehors de ces circonstances défavorables, les spermazoïdes peuvent, pendant plusieurs heures, manifester leur existence; Wagner assure même qu'il a noté ces signes de vie après vingt-quatre heures.

Cependant les animalcules spermatiques, observés dans les organes de la femme qui les doivent normalement recevoir, vivent un temps beaucoup plus long dans ces organes ; plusieurs observateurs ont acquis cette certitude, en examinant le sperme trouvé dans le vagin, et surtout dans l'utérus et les trompes de Fallope. Leeuwenhoeck pensait que les spermazoïdes pouvaient se mouvoir dans ces organes pendant huit jours ; Prévost et Dumas ont vu les zoospermes s'agitant encore, dans les trompes de chiennes, sept jours après le coït, et Bischoff a observé le même phénomène dans les trompes de lapines, huit jours après l'accouplement (1).

La motilité des animalcules spermatiques est diminuée et même détruite par certaines circonstances que les observateurs ont notées; parmi elles je citerai le froid, le chaud, l'électricité par décharge, les acides, l'acide cyanhydrique (Prévost et Dumas), la strychnine (Wagner), les narcotiques, le mucus vaginal dont l'acidité est augmentée, et le mucus utérin dont l'alcalinité est plus prononcée (Donné) ; d'un autre côté, le mucus, la salive, le lait, le pus (Donné), (2) l'urine (Wagner), n'ont aucune influence sur cette même motilité.

On a également remarqué que les spermatozoïdes n'ont pas toujours la même énergie, la même densité, les mêmes dimensions depuis le moment où ils se rencontrent dans le testicule, jusqu'à celui où on les examine après le coït. Ils peuvent être plus ou moins nombreux, très-rares, remplacés par des produits incomplets, et même manquer complétement chez certains malades. Duplay, dans un travail dont j'aurai à m'occuper plus tard (3), avance que la sécrétion spermatique s'effectue encore chez les vieillards de quatre-vingt-six ans, quoiqu'elle soit moins abondante que chez l'adulte, et que, contrairement à l'opinion généralement admise, les spermatozoïdes se retrouvent encore dans leur liqueur séminale. Enfin, dans ses recherches sur l'oblitération des voies spermatiques (1), M. Gosselin a constaté que le nombre des animalcules va en augmentant, depuis le testicule et l'épididyme, où ils sont très-rares, jusqu'aux vésicules séminales où ils sont très-nombreux.

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(1) Bischoff, *Traité du développement de l'homme et des mammifères*, trad. de l'allemand par A.J.-L. Jourdan. Paris, 1843.

(2) Donné, *Cours de microscopie complémentaire des études médicales. Anatomie microscopique et physiologique des fluides de l'économie*, Paris, 1844.

(3) Duplay, *Recherches sur le sperme des vieillards* (*Archives de médecine*, 1852, 4e série, t. XXX, p. 385).

La nature des spermatozoïdes a donné lieu à de nombreuses controverses: Les premiers observateurs, Leeuwenhoeck, Spallanzani, etc., n'élevaient aucun doute sur leur animalité, et, s'appuyant sur cette opinion, Ehrenberg les plaça parmi les microzoaires suceurs, tandis que Czermak, les faisant rentrer dans les infusoires, classa les uns dans les vibrionides, les autres dans les cercaires, etc., etc.

Leur organisation a été diversement décrite par les auteurs. Valentin a signalé dans les spermatozoïdes de l'ours un suçoir antérieur, un anus, des vésicules stomacales ou des circonvolutions d'intestin. Gerber assure avoir distingué des organes de génération dans les spermatozoïdes du cabiai. Schwann prétend qu'il existe, au centre de la tête des spermatozoïdes de l'homme, une ventouse ou un suçoir analogue à celui des cercaires et des douves. F. A. Pouchet (de Rouen), sur les travaux duquel j'aurai à revenir bientôt, a noté en avant une sorte de ventouse stomacale, en arrière une circonvolution intestinale, faisant suite à ce premier organe, et a reconnu que toute la surface des spermatozoïdes est recouverte d'un feuillet épithélial.

Mais l'animalité des spermatozoïdes est vivement attaquée aujourd'hui : ces prétendus animaux ne seraient autre chose que le produit d'une *cellule embryonnaire*.

Les travaux et les observations de Wagner, de Lallemand, de Hallemann, et surtout de Kölliker, ont le plus contribué à propager cette manière de voir. M. Charles Robin, se rangeant sous ce drapeau, a mieux peut-être que ses devanciers décrit le développement des spermatozoïdes, dans un Mémoire qui fixa tout d'abord l'attention du monde savant (1). Depuis cette époque, l'école histologique est intervenue avec ses procédés minutieux d'investigation et voici, en quelques mots, les résultats auxquels elle est arrivée.

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(1) Gosselin, *Archives de médecine*. Paris, 1847, t. XIV, p. 405.

Le testicule appartient à la classe des *glandes en tube*, c'est-à-dire que le liquide sécrété est produit dans de longs tubes minces et filamenteux. Ces tubes séminifères sont tapissés à l'intérieur par un *épithélium* ou couche de cellules.

Lorsque ces cellules, par le fait de la vitalité, augmentent de volume, on voit apparaître dans leur intérieur, d'abord un point brillant qui est la tête d'un futur spermatozoïde et auquel s'ajoute bientôt un filament plus ou moins enroulé sur lui-même qui est la queue du même spermatozoïde. En même temps ces cellules se détachent de l'épithélium et cheminent dans les tubes séminifères vers le bord postérieur du testicule; pendant ce trajet, ou même plus tard, au niveau de l'épididyme, elles se brisent et laissent échapper les filaments qu'elles contiennent et qui sont les spermatozoaires; les débris des cellules et le liquide qu'elles renferment complètent la composition du sperme testiculaire.

Je dirai plus loin comment M. Ch. Robin, par suite de l'assimilation qu'il fait de l'ovule mâle à l'ovule femelle, explique le rôle des spermatozoïdes dans l'acte de la génération.

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(1) Charles Robin, *Mémoire sur l'existence d'un œuf ou ovule chez les mâles comme chez les femelles* (*Comptes rendus de l'Académie des sciences*, 1848, t. XXVII, p. 427.)

D. — *Durée de l'acte séminal.*

La présence des spermatozoïdes dans la liqueur séminale marque pour l'homme l'époque de la puberté.

En cette circonstance, la loi, d'accord avec les observateurs, fixe cette époque à l'âge de dix-huit ans révolus; en effet, tandis que le code civil, par son article 144, n'autorise le mariage des garçons qu'après la dix-huitième année, les micrographes les plus autorisés assurent n'avoir jamais trouvé de zoospermes avant cet âge.

On doit donc admettre que la sécrétion des spermatozoïdes, non-seulement imprime à toute l'économie une modification décrite par les physiologistes, et au moral une impulsion notée par les psychologistes et chantée par les poëtes, mais encore éveille le sens génital et lui communique une énergie que sans elle il ne connaîtrait jamais.

En effet, les eunuques, opérés avant la puberté, n'ont rien de l'homme : ni désirs, ni érection, ni faculté procréatrice; opérés après la puberté, au contraire, s'ils perdent le pouvoir reproducteur, ils conservent les désirs et les érections, comme, au dire de Juvénal, le savaient très-bien les dames romaines.

Cependant, d'après les observations si scrupuleuses de Godard (1), les cryptorchides ne présentent des zoospermes ni dans les canalicules, ni dans les canaux déférents, ni dans les vésicules séminales, et cependant ils ont des désirs, des érections et peuvent accomplir le coït qui, il est vrai, n'est jamais suivi de fécondation.

Mais n'oublions pas que dans la cryptorchidie les testicules existent et, qu'incomplétement frappés d'atrophie, ils fonctionnent d'une manière plus ou moins active.

Quand, au contraire, il y a anorchidie, c'est-à-dire absence congénitale et complète des testicules, l'individu atteint de cette infirmité n'a ni érection, ni éjaculation; il est tout à la fois impuissant et stérile.

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(1) Godard, *Études sur la monorchidie et la cryptorchidie*, Paris, 1857.

Donc, à ne considérer que l'appareil génital, la puberté, chez l'homme, est caractérisée par la sécrétion testiculaire, sans qu'il soit nécessaire que le produit de cette sécrétion, c'est-à-dire les spermatozoïdes, soit porté au dehors.

Cette sécrétion, comme je l'ai dit tout à l'heure, imprime dès le début un caractère particulier, non-seulement à l'organe copulateur, mais encore à l'économie tout entière, et donne à l'enfant tous les attributs de l'homme.

Cette transformation, qui s'opère, en moyenne, ainsi que je l'ai noté plus haut, à l'âge de dix-huit ans, peut être avancée ou retardée par des causes dont les unes sont inhérentes à l'individu et dont les autres lui viennent de l'extérieur. Parmi les premières se rangent le développement de l'organisme, l'état de santé ou de maladie, la constitution, le tempérament, les habitudes, la manière de vivre, l'éducation, la moralité, etc., et parmi les secondes se classent la latitude géographique, les climats, les races, l'état de la civilisation, la religion, etc.

Toutes ces circonstances, tant individuelles que générales, n'agissent pas seulement sur le développement de l'âge pubère; elles ont aussi une influence marquée sur la diminution et la cessation des facultés copulatrice et génératrice.

J'ai soin de ne pas dire de l'acte séminal, car depuis les recherches de M. Duplay sur le sperme des vieillards, il est établi que, en dehors de quelques exceptions, les testicules sécrètent des spermatozoïdes jusqu'à la mort.

Il est donc impossible de fixer, d'après l'acte séminal, la durée de la fonction génitale de l'homme; sous ce rapport, nous n'avons pas, comme chez la femme, un signe certain qui indique la cessation du pouvoir reproducteur et par conséquent de la fonction génitale; il est des vieillards qui pour le coït et la procréation valent de jeunes hommes.

§ II. — Acte ovarien.

Quelques animaux n'ont qu'un seul ovaire, comme les myxinoïdes et quelques squales; Rathke n'a rencontré qu'un seul ovaire et qu'un seul testicule chez plusieurs poissons osseux. Chez la plupart des oiseaux, à l'exception des rapaces, il ne se développe que l'ovaire et l'oviducte gauches; mais ceux du côté droit existent à l'état rudimentaire chez le fœtus. D'autres animaux inférieurs, au contraire, comptent un nombre plus ou moins grand de ces organes : ainsi, chez les vers cestoïdes, les organes génitaux mâles et femelles se répètent dans chacun de leurs anneaux parvenus à maturité.

Dans l'espèce humaine, dont je m'occuperai désormais exclusivement, les ovaires sont au nombre de deux, flottant dans le bassin et appendus au repli postérieur du ligament large; leur tissu propre, que, depuis Baër, on désigne souvent sous le nom de *stroma*, renferme, pendant tout le temps que l'individu est apte à la génération, un nombre plus ou moins considérable de vésicules ou petits sacs membraneux, fort apparents, que l'on connaît sous le nom de *vésicules de de Graaf.*

Ces vésicules doivent un instant fixer notre attention.

A. — *Vésicules de de Graaf.*

L'ovaire de la femme en présente de douze à vingt, d'après la plupart des observateurs; Rœderer et quelques autres assurent en avoir compté jusqu'à cinquante; outre celles-ci, Berry et Pouchet en ont signalé encore un grand nombre d'autres que le microscope seul permet d'apercevoir.

Ces vésicules ont une double enveloppe : l'une, externe, plus forte, rétractile, ne se distingue pas du tissu propre de l'ovaire; l'autre, interne, appelée *membrane épithéliale granuleuse de Baër*, composée de vésicules microscopiques à parois translucides, sillonnée de vaisseaux, selon Pouchet, et en manquant entièrement selon MM. Bischoff et Courty, forme un sac entièrement fermé. C'est cette membrane granuleuse qui, en s'accroissant considérablement, constitue plus tard les corps jaunes. D'une ténuité excessive, à ce point qu'il est très-difficile de l'obtenir intacte par la dissection, elle n'est pas égale partout; lorsque la vésicule de de Graaf se prépare à émettre son œuf, la membrane granuleuse se trouve refoulée vers le point où va se produire la déchirure et forme autour de l'œuf un coussin protecteur au milieu duquel il est placé, et auquel Baër avait donné le nom de *cumulus* ou *disque proligère*.

Le liquide renfermé dans la vésicule de de Graaf est très-abondant, clair, visqueux, ne contenant que de rares granulations moléculaires et des gouttes d'huile. Quand on ouvre la vésicule de de Graaf, ce liquide s'en échappe avec force et entraîne avec lui le disque prolifère ayant encore l'ovule dans son épaisseur.

B. — *Ovule.*

L'œuf préexiste à la fécondation; sans recourir à l'analogie, des observations directes ont mis cette assertion hors de doute, non-seulement pour les vertébrés et les mammifères, mais encore pour l'espèce humaine. On a constaté les œufs à divers degrés de développement sur des individus vierges et même dans les premiers temps de la vie. Duvernoy, après les avoir notés chez les fœtus de quelques poissons, assure que l'on peut reconnaître les premiers vestiges des œufs dans les ovaires de jeunes filles de quatre ans et sur ceux des sujets morts peu de temps après la naissance. Carus a décrit des ovules trouvés dans les mêmes conditions d'âge. Ritchie a constaté que les ovaires des enfants nouveau-nés et des enfants plus âgés offraient quelquefois, en assez grand nombre, des vésicules ovariennes qui sont le siége d'une injection très-vive à partir de la sixième année, et qui ont déjà un volume assez considérable, depuis celui d'une graine de coriandre jusqu'à celui d'un petit grain de raisin (vers la quatorzième année). Dans ces derniers temps, MM. Négrier, Bischoff, Courty, et Coste en particulier, ont fait des observations confirmatives des faits constatés par leurs prédécesseurs.

Le nombre des œufs contenus dans l'ovaire est excessivement considérable, eu égard à ceux qui doivent être fécondés. D'après Coste, l'ovaire de la femme, destiné à n'émettre qu'une petite quantité d'œufs, n'est pourtant pas moins richement pourvu que celui des mammifères les plus féconds; d'où il faut conclure qu'un très-grand nombre de ceux-ci doivent avorter de bonne heure, périr et être résorbés. Je dirai tout à l'heure comment les autres, ayant subi toutes les phases de leur développement, sont expulsés de la vésicule qui les contient; je dois à présent faire connaître la structure anatomique de l'œuf.

Il a la forme d'une petite sphère d'un diamètre de 1/15ᵉ à 1/20ᵉ de millimètre: Huschke dit l'avoir trouvé arrondi, mais oblong, chez une jeune fille de six semaines. Son volume augmente un peu après sa sortie de l'ovaire; sa couleur est jaunâtre, claire, translucide. Plusieurs observateurs en ont trouvé deux et même trois dans la même vésicule de de Graaf.

On n'est pas d'accord sur la position qu'il occupe dans la vésicule. Suivant Wagner, l'œuf du chien, encore très-petit et non parvenu à maturité, serait situé au centre du follicule, et à maturité il serait très-près de la membrane interne;

Bischoff prétend que c'est sur la membrane granuleuse qu'il se trouve implanté; Pouchet, au contraire, assure, d'après les observations sur la truie répétées un grand nombre de fois, qu'il se développe à la surface interne de la membrane granuleuse, mais, qu'une fois formé; il est placé au point le plus superficiel de l'ovisac, et conserve invariablement la même position et ses rapports avec le disque proligère.

La structure de l'ovule présente trois points à examiner : 1° la *membrane vitelline;* 2° le *vitellus;* 3° la *vésicule germinative.*

Membrane vitelline. — C'est l'enveloppe protectrice du vitellus, à laquelle on donne aussi les noms de *chorion*, de *zone transparente* de Baër, de *colemma pellucidum* de Kraüse. Close de toutes parts, elle apparaît sous forme d'anneau fort clair et large, dont les contours externe et interne sont accusés par deux lignes circulaires bien tranchées, tandis que l'intervalle est parfaitement transparent; cette écorce a une épaisseur de 150 000° de milimètre et offre une assez grande solidité; elle est formée d'une substance tout à fait homogène, incolore et sans granulations.

Vitellus. — Contenu dans la membrane vitelline, il consiste en une quantité innombrable de très-fins granules, unis ensemble par une humeur très-visqueuse et susceptible d'éprouver un retrait en masse, lorsque l'eau pénètre par endosmose entre lui et la membrane vitelline

Vésicule germinative ou de Purkinje. — Découverte par Coste, et étudiée par MM. Jones, Valentin, Bernhardt, c'est une petite vésicule de $0^{mm},035$ à $0^{mm},040$, très-fragile et transparente. Elle est située au milieu des granules du vitellus qui peuvent la dissimuler. Elle est hyaline et renferme un liquide qui contient des granules d'un jaune verdâtre. Ceux-ci la remplissent en partie et forment à son centre un noyau s'avançant presque jusqu'au contact de la paroi interne. C'est cet amas de granules colorés qui constitue la *tache germinative* de Wagner dont l'existence a été constatée dans l'espèce humaine, les mammifères et la plupart des animaux.

L'œuf que je viens de décrire ne peut, on le comprend, subir des accroissements ultérieurs sans briser et abandonner la vésicule de de Graaf, et par conséquent sans sortir de l'ovaire. Je vais rapidement décrire ce double travail d'expulsion qui s'opère, soit à l'époque de la menstruation, soit sous l'influence de l'excitation du coït.

On sait que les vésicules de de Graaf sont d'abord très-petites et ensevelies dans le tissu même de l'ovaire. Elles s'arrêtent quelque temps à ce premier degré de développement pendant qu'il s'en forme de nouvelles ; puis elles gagnent le bord libre de cet organe, apparaissent à sa surface, mais ne s'isolent et ne se pédiculisent jamais, comme chez l'oiseau. Toute la portion de la vésicule qui s'élève au-dessus de l'ovaire devient mince et transparente, tandis que les vaisseaux, comprimés par suite de la dilatation, s'atrophient, s'oblitèrent même dans le point le plus saillant.

C. — *Expulsion de l'ovule.*

Parvenus ainsi au terme de leur accroissement, les vésicules semblent rester stationnaires jusqu'au moment où une surexcitation provoquée, soit par la maturité de l'œuf, soit par le rapprochement des sexes, vient en déterminer la rupture. Sous l'influence de cette stimulation qui détermine en même temps, comme nous allons le dire, la contraction des fibres musculaires du ligament large, le liquide qui les remplit est sécrété en plus grande abondance et distend la cavité outre mesure; aussi ses parois, pressées d'autre part par le stroma congestionné de l'ovaire, se déchirent dans le point le plus culminant, et, en se rétractant, expriment avec violence le liquide qu'elles contiennent.

Le liquide exprimé par le retrait du follicule, rencontrant sur son passage le disque proligère et l'œuf qu'il renferme, détache et entraîne celui-ci, pendant que, de son côté, le pavillon de la trompe vient le saisir et le diriger vers son intérieur, par l'action contractile dont la trompe est douée, et par celle des cils vibratiles développés sur le pavillon et dans son intérieur, et dont l'action s'exerce de dedans en dehors, selon les observateurs qui en ont constaté l'existence.

La rupture de la vésicule ne se fait pas sans une inflammation assez intense, laquelle se traduit par une sorte d'hypertrophie et de tuméfaction de la membrane interne, et par la dilatation des vaisseaux qui se trouvent dans son épaisseur. Le feuillet externe, au contraire, fibreux, élastique, en rapport avec le stroma de l'ovaire, ne participe pas à l'inflammation, et commence à se rétracter. La rétraction de ce second feuillet, coïncidant avec la tuméfaction du premier, qui est lié, avec lui, dans certains points par des brides fibreuses, détermine dans le feuillet interne la formation de plis qui, croissant de plus en plus, arrivent bientôt au contact et donnent à l'intérieur de la vésicule ovarique l'aspect des circonvolutions cérébrales. « Ce n'est qu'en dernier lieu et assez tard, dit F. A. Pouchet, que les circonvolutions, après s'être avancées lentement vers la partie centrale de la vésicule, parviennent à s'y rencontrer et à se confondre, et alors la cavité de cet organe se trouve désormais totalement remplie par l'extension de la membrane propre ; alors celle-ci constitue un corps plus ou moins globuleux ou ovoïde, dont l'intérieur présente une couleur d'un rouge grisâtre pâle, et une consistance pulpeuse qui semble tout à fait analogue à la substance grise du cerveau : c'est là le *corps jaune*, *corpus luteum* (1). »

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(1) F.-A. Pouchet, *Théorie positive de l'ovulation spontanée*. Paris, 1847, 1 vol. in-8.

Enfin un troisième phénomène accompagne la rupture de la vésicule de de Graaf, c'est l'écoulement sanguin qui se produit à travers la muqueuse utérine et auquel on donne le nom de *règles*, de *menstrues*, *d'écoulement menstruel ou cataménial.*

Ainsi trois faits sont inséparables de la rupture d'une vésicule de de Graaf, et leur ensemble constitue ce qu'on appelle *l'ovulation périodique;* ces trois faits sont : 1° l'expulsion de l'ovule; 2° sa réception dans la trompe de Fallope; 3° une hémorrhagie sanguine par l'utérus.

Les deux premiers constituent à proprement parler l'*ovulation* et le dernier est exprimé par le mot *menstruation.*

Ces trois phénomènes, disons-nous, sont inséparables les uns des autres; ils sont en effet produits par la même cause et obéissent au même mécanisme.

Sous l'influence de l'excitation naturelle, amenée par la maturité d'un ovule, et qui constitue le *rut* chez les animaux, les fibres musculaires dont sont pourvus les ligaments larges et qui sont en continuité avec les éléments contractiles des trompes, entrent en contraction et, par suite, compriment les vaisseaux veineux qu'ils embrassent, tandis que les artères, grâce à leur petitesse et à leur résistance, échappent à cette compression.

De cet obstacle au retour du sang, il résulte une turgescence sanguine dans tout l'appareil génital interne : le stroma de l'ovaire éprouve une sorte d'érection qui comprime la vésicule de de Graaf, amène sa rupture et facilite la sortie de l'ovule; la trompe, sollicitée et guidée par la contraction de ses fibres musculaires qui, nous venons de le dire, communiquent avec les fibres musculaires du ligament large, vient embrasser avec son pavillon l'ovaire presque tout entier; et enfin les capillaires de la muqueuse utérine, gonflés par le sang qui ne peut rentrer dans la circulation générale, se déchirent et laissent échapper le liquide qui constitue l'hémorrhagie cataméniale.

Cette explication, que toutes les observations médicales ont confirmée, est le résultat des travaux les plus récents et surtout de ceux du professeur Rouget, de Montpellier, qui le premier l'a formulée d'une manière magistrale (1).

D. — *Durée de l'acte ovarien.*

Chez l'homme, la faculté procréatrice découle de l'acte séminal ; chez la femme la même faculté est une conséquence de l'acte ovarien.

Chez l'homme, la présence de zoospermes dans le liquide sécrété, est la seule preuve du travail testiculaire.

Chez la femme, l'hémorrhagie périodique est le seul indice de l'expulsion de l'ovule.

Tandis que la science ne possède aucune observation de fécondation opérée avec un liquide dépourvu d'animalcules spermatiques, on cite des faits d'imprégnation en dehors de toute manifestation menstruelle.

Ces faits sont vrais ; ils constituent des exceptions qui, interprétées néanmoins, n'infirment pas la règle générale.

Il est incontestable, en effet, que par suite ou d'une disposition particulière ou d'un état maladif, les règles peuvent faire défaut, alors que s'accomplissent les deux autres parties de l'acte ovarien ; mais alors, presque toujours, la nature nous avertit de ce travail, soit par une hémorrhagie supplémentaire, soit par un malaise quelquefois douloureux auquel on donne le nom de *molimen*.

Les femmes sans menstrues qui ont été fécondées avaient ou une hémorrhagie supplémentaire ou le molimen hémorrhagique; dans tous les cas l'acte ovarien s'accomplissait.

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(1) *Du tissu érectile*, par Rouget, thèse de concours. Paris, 1856. — *Journal de physiologie* de Brown-Séquard, 1858, — *Société de biologie*, 1857. — *Archives de physiologie*, 1868 (Des mouvements érectiles).

Quoi qu'il en soit et malgré quelques exceptions qui mieux étudiées rentrent dans la règle, la perte de sang périodique est le signe extérieur de la rupture d'une vésicule et par suite de l'aptitude de la femme à la procréation.

J'ai dit plus haut le lien qui unit indissolublement les trois phénomènes qui constituent l'ovulation, de telle manière que l'existence de l'un implique fatalement l'existence de l'autre. Aussi il est bien entendu que dans le cours de cet ouvrage les mots *menstruation*, *règles*, *menstrues*, etc., désigneront non-seulement l'hémorrhagie périodique, mais encore la rupture d'une vésicule et l'entrée de l'ovule dans le pavillon de la trompe; en un mot les trois phénomènes de l'acte ovarien tout entier.

Comme chez l'homme, l'époque à laquelle apparaît la faculté de procréer n'a rien de fixe chez la femme; elle peut être avancée ou retardée par les mêmes circonstances qui influent sur l'âge de la puberté de l'homme; mais on peut dire, d'une manière générale, que dans nos climats tempérés, la menstruation se montre, en moyenne, de treize à dix-huit ans, et que par conséquent la loi, en permettant à quinze ans le mariage des jeunes filles, ne s'est point écartée de l'observation physiologique.

La cessation définitive des règles ou *ménopause* n'arrive pas également à une époque fixe et égale pour toutes les femmes. D'après les relevés statistiques de MM. Brière de Boismont, Pétrequin et surtout Raciborsky (1) on peut dire, en thèse générale, que l'âge critique apparaît de quarante à cinquante ans.

Mais qu'elle soit avancée ou retardée, la ménopause est toujours le signe de la cessation du pouvoir reproducteur chez la femme.

(1) Raciborskí, *Traité de la menstruation, etc.* Paris, J.-B. Baillière et fils, 1868, 1 vol. in-8.

Il arrive quelquefois qu'à l'époque ordinaire de l'âge critique, les règles se suspendent pour reparaître après un temps plus ou moins long. Dans ces circonstances la fécondité revient avec la menstruation, et Haller a vu des femmes dans ce cas, qui avaient encore des enfants à l'âge de soixante-dix ans.

Mais, je le répète, avant l'évolution des règles comme après leur cessation, il n'y a pas pour la femme de pouvoir reproducteur; elle peut se livrer passivement au coït et même, par des habitudes de débauche, se créer des désirs et des jouissances; mais elle ne possède pas encore ou ne possède plus la faculté d'être fécondée et de donner la vie à un nouvel être.

Ces considérations sont d'une grande importance pour nous, et d'après tout ce que j'ai dit, on peut établir en axiome que *sans menstruation il n'y a point de fécondation de la femme.*

§ III. — **Génération.**

Pour que l'acte copulateur dont nous avons dit plus haut les sensations voluptueuses devienne productif d'un nouvel être, il faut que l'organe mâle soit directement opposé à l'organe gestateur, de telle sorte que le méat urinaire de l'homme se trouve en face et à peu de distance de l'ouverture extérieure du museau de tanche, afin que le liquide séminal qui sort par saccades du premier puisse librement entrer dans la bouche *béante* du second.

Tout à l'heure je donnerai l'explication du mot *béante* que je souligne à dessin.

Sans cette opposition directe de l'organe mâle et de l'organe femelle, la fécondation n'a pas lieu; cela est si vrai que les déplacements du col de l'utérus, comme nous le verrons ailleurs, amènent une stérilité fort heureusement facile à vaincre: si l'homme, ainsi que le disent quelques physiologistes, n'avait d'autre mission que celle de déposer son sperme au fond du vagin d'où les zoospermes monteraient dans le col de l'utérus, la plupart des déviations utérines n'amèneraient pas l'infécondation, car les spermatozoïdes finiraient toujours par trouver leur chemin.

De plus il ne serait pas nécessaire que l'ouverture du museau de tanche devînt béante au moment de l'éjaculation ; il faudrait, au contraire, que la contraction des fibres circulaires du col se fît après le coït, bien que les zoospermes ne me paraissent pas avoir besoin, pour pénétrer dans le col, de cette augmentation d'ouverture.

Tout, au contraire, tend à faire admettre que la contractilité du col est éveillée par le premier jet de la liqueur séminale, et que, sous l'influence de cette excitation, les fibres musculaires circulaires du col se contractent en même temps que ses fibres longitudinales, de telle sorte que l'ouverture du col se dilate pour recevoir le liquide que chassent du bulbe uréthral les contractions spasmodiques du muscle de l'urèthre.

Cette dilatation spasmodique de l'ouverture du museau de tanche est si importante qu'on est obligé, dans quelques circonstances dont nous parlerons plus loin, de la provoquer, pour amener la cessation de l'infécondité.

L'acte copulateur a donc pour but de mettre en présence le méat urinaire de l'homme et l'ouverture du museau de tanche; d'amener la dilatation spasmodique de celle-ci au moyen du premier jet de la liqueur séminale presque entièrement composé, on peut le croire, de fluide prostastique, et de faire ainsi pénétrer *directement* et *aussi loin que possible* le sperme fécondant dans l'intérieur de l'utérus.

A ce point de la fonction génératrice le mystère commence; malgré les connaissances plus positives que nous possédons sur le sperme et les œufs, et que j'ai précédemment exposées, le problème de la fécondation est loin d'être résolu;

il est réduit, il est vrai, en deux points seulement, mais ce sont les points les plus ardus et les plus difficiles à pénétrer ; à peu près toute la question est aujourd'hui de savoir : 1° dans quel organe, ovaire, trompe ou utérus, se fait la rencontre du spermatozoïde et de l'œuf; 2° quelle est la nature de leur contact, l'essence de leur union.

1° *Lieu où se fait la fécondation.* — Les ovaires, les trompes et l'utérus ont été tour à tour regardés comme la scène sur laquelle se rencontrent le produit mâle et le produit femelle. Des expériences nombreuses et contradictoires ont jeté la confusion sur cette partie du problème et l'on hésite à accorder sa confiance ou aux physiologistes qui assurent avoir trouvé du sperme jusque dans l'ovaire, ou à ceux qui nient positivement la réalité de ces observations. Cependant, en lisant sans esprit de parti et dans le but unique d'arriver à la vérité la relation de toutes les expériences et les arguments de chaque adversaire, on ne peut se défendre d'un sentiment de préférence pour la théorie de Pouchet qui place dans l'utérus ou dans la partie des trompes la plus voisine de cet organe la rencontre de l'œuf et du sperme. « La structure des trompes, dit-il, leur vitalité, et la nature des zoospermes empêchent de supposer que ce fluide (*le sperme*) puisse remonter plus haut; et d'ailleurs le mucus infranchissable, qui remplit ces conduits oppose aux spermatozaires un obstacle invincible (1). »

L'ouvrage de Pouchet est trop connu pour que j'analyse seulement les arguments et les expériences qu'il cite à l'appui de son opinion ; et, malgré la communication de Coste (2) à l'Institut, par laquelle l'auteur répudie sa première manière de voir pour placer le siége de la fécondation dans l'ovaire, je crois, d'après quelques expériences personnelles dont il est inutile de surcharger cette introduction, je crois, dis-je, que la rencontre de l'œuf et du fluide séminal se fait normalement dans l'utérus ou dans la première portion des trompes.

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(1) Pouchet, *Théorie positive de l'ovulation spontanée et de la fécondation*. 1 vol. in-8, 1849, p. 298.

(2) Coste, *Académie des sciences*, séance du 20 mai 1850.

Les grossesses extra-utérines ne peuvent plus être considérées aujourd'hui comme un argument en faveur des fécondations ovariennes contre les fécondations utérines ; Astruc, Marc, Lallemand, Velpeau (1), etc., ont suffisamment montré que ces grossesses anormales étaient produites par quelque sensation ou quelque émotion extraordinaire au moment du coït ; cette explication me paraît encore plus scrupuleuse que cette assertion, émise par des physiologistes recommandables d'ailleurs, tels que MM. Pouchet et Courty (2), par exemple, et par laquelle on voudrait que l'œuf, tombé dans l'abdomen au moment de l'effroi, y fût fécondé plus tard par le sperme. Si le sperme ne peut, par les raisons que Pouchet lui-même énumère, parcourir les trompes, il est impossible qu'il arrive jusque dans l'abdomen pour y féconder l'œuf qui serait tombé dans sa cavité. Il est plus rationnel d'admettre que l'œuf a déjà reçu l'imprégnation de la liqueur séminale, lorsque, par suite des sensations et des émotions extraordinaires dont je parlais plus haut, il quitte le lieu normal de sa résidence, soit pour se fixer dans les trompes, soit pour tomber dans l'abdomen.

2° *Époque à laquelle se fait la fécondation.* — J'ai étudié, plus haut, les phénomènes qui s'accomplissent dans la vésicule de de Graaf au moment de la sortie de l'œuf. Je n'y reviendrai pas ici. Je dirai seulement que, eu égard à ce qui se passe chez les mammifères soumis à l'observation directe, on peut supposer que les vésicules de de Graaf s'ouvrent tout à fait à la fin de la période menstruelle : aussi Pouchet se croit-il en droit de pouvoir déterminer l'époque à laquelle l'œuf est fécondé. Qu'on me permette de citer le passage de son livre relatif à ce point très-important pour nous : « La vésicule de de Graaf (car il n'y en a presque constamment qu'une), qui doit émettre l'ovule, se développe pendant le cours de l'époque menstruelle. Puis, soit immédiatement après la cessation du flux cataménial, soit seulement lorsqu'il s'est écoulé un, deux, trois ou quatre jours après sa terminaison, cette vésicule s'ouvre et laisse échapper l'ovule qu'elle contenait.

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(1) Velpeau, *Embryologie ou ovologie humaine*, contenant l'histoire descriptive et iconographique de l'œuf humain. Paris, 1833, in-folio.

(2) Courty, *De l'œuf et de son développement dans l'espèce humaine*. Paris, 1845

» L'œuf est alors saisi par le pavillon, et il entre dans la trompe, qu'il parcourt avec lenteur. Je pense qu'il met ordinairement de deux à six jours à la franchir et à se rendre de l'ovaire dans l'utérus.

» Arrivé dans la matrice, il s'y trouve encore retenu de deux à six jours par la *decidua* exsudée à la surface de la muqueuse vers le déclin de l'irritation qui suit l'époque menstruelle.

» Si l'œuf n'est point alors imprégné de sperme, il ne se fixe pas à l'utérus, et se trouve enlevé avec la *decidua ;* celle-ci tombe ordinairement du dixième au douzième jour, à compter de la cessation des menstrues.

» L'expérience ayant prouvé que, chez les mammifères, le fluide séminal versé à l'intérieur des organes génitaux des femelles y conservait plus de trente heures sa vertu prolifique, il est probable qu'il en est de même sur notre espèce. Aussi un rapprochement opéré un et peut-être deux jours avant le passage de l'œuf dans l'endroit où il subit l'imprégnation peut-il devenir fécond.

» Mais tout rapprochement sexuel opéré après la chute simultanée de la *decidua* et de l'œuf, et durant tout le temps qui sépare cette chute de l'invasion de la période menstruelle, est absolument infécond.

» Or, comme nous avons reconnu que la *decidua* tombait constamment du dixième au douzième jour de l'intermenstruation, il résulte conséquemment de ce fait que la conception ne peut s'opérer que du premier au douzième jour qui suivent les règles, et que jamais elle n'a lieu après cette époque (1). »

M. Courty, de son côté, sans être aussi affirmatif que Pouchet, s'exprime ainsi : « Nous sommes porté à conclure que, en général, chez la femme, la conception ne peut avoir lieu que pendant les huit à dix premiers jours qui suivent les règles (2). »

Cette théorie est très-séduisante, il en faut convenir, et simplifie singulièrement le difficile problème de la fécondation; mais malheureusement elle est en désaccord avec l'observation journalière, qui montre la possibilité de la conception, chez la femme, à toutes les époques de la période intermenstruelle, et quelquefois l'inutilité du coït aux époques fixées par Pouchet et Courty comme les seules propres à la fécondation.

Coste a cherché à aplanir ces difficultés, et, pour répondre à la dernière objection, il assure que le travail de l'ovaire peut être incomplet malgré la régularité des règles, et que la vésicule, parvenue à un certain degré de développement, peut rester quelque temps stationnaire, puis avorter sans se rompre.

Cependant, quoiqu'on ne puisse admettre d'une manière absolue la théorie de Pouchet, il faut reconnaître qu'elle n'est pas absolument erronée, et qu'il faut conseiller aux époux l'époque indiquée, non comme une condition indispensable, mais comme une circonstance favorable.

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(1) Pouchet, *Théorie positive de l'ovulation spontanée et de la fécondation*, p. 274-275.

(2) Courty, *De l'œuf et de son développement dans l'espèce humaine*, p. 81.

3° *Union de l'œuf avec le sperme.* — La nature de l'union du principe générateur mâle avec le principe générateur femelle échappe complétement à l'observation, dans l'état actuel de la science. Prévost et Dumas, trompés par les apparences, pensaient qu'au niveau de la matricule, dans l'œuf des oiseaux, il existe un pertuis dans lequel ils croyaient avoir vu des spermatozoïdes s'introduire dans le vitellus. Barry prétend avoir observé la même disposition sur la lapine, et avoir vu aussi un zoosperme s'enfoncer dans la zone transparente qui circonscrit l'ovule. Pouchet assure que ses recherches sur les mollusques semblent parfaitement constater l'existence d'une solution de continuité à la surface de la membrane vitelline.

Mais toutes ces observations n'ont pas tellement un caractère d'authenticité qu'on les doive accepter comme l'expression fidèle de la réalité. Je préfère admettre que l'union du principe générateur mâle avec le principe générateur femelle se fait par endosmose, et que, lorsque le sperme se trouve en contact avec l'œuf, il s'établit à travers celui-ci, de dehors en dedans, des courants spermatiques qui entraînent avec eux les spermatozoïdes.

M. Charles Robin, considérant, ainsi que je l'ai dit plus haut, les spermatozoïdes comme des espèces d'œufs ou cellules embryonnaires, veut que « la nature de cette union consiste dans la dissolution des spermatozoïdes, avec pénétration endosmotique molécule à molécule dans l'ovule femelle, d'où formation des cellules embryonnaires femelles » (1).

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(1) D. Richard, *Histoire de la génération chez l'homme et chez la femme*. Paris, 1875, p. 206.

CHAPITRE III

RAPPORTS DE LA FONCTION GÉNÉRATRICE AVEC LES AUTRES FONCTIONS DE L'ORGANISME.

L'homme n'est appelé à reproduire son semblable que lorsque toutes les fonctions de l'organisme s'exécutent avec une énergie suffisante; la fonction génératrice est la dernière à entrer en exercice et la première à disparaître de la scène de la vie, parce que la nature a voulu que le produit de cette fonction portât l'empreinte de la vitalité la plus forte, et que la grande et sublime mission de la perpétuation de l'espèce s'accomplît au milieu des conditions les plus favorables de toutes sortes.

Avant la mise en jeu des organes génitaux, l'homme, pour ne parler ici que de lui, n'a qu'une vie individuelle, ne participe au monde extérieur que pour la satisfaction de ses besoins personnels, et, par cet égoisme d'un instant, il s'ouvre la voie de l'existence dont le but unique, aux yeux de la nature, est la production d'un être nouveau et semblable à lui. Avant a puberté, l'homme, si je puis ainsi dire, n'est pas une réalité, ce n'est qu'une espérance; il n'est rien dans le passé, il est peu dans le présent, il est tout dans l'avenir. Confondus sous a dénomination commune d'enfants, les deux sexes se ressemblent au physique et au moral; mais à mesure qu'ils avancent vers l'époque où chacun d'eux aura à remplir une fonction spéciale, les formes extérieures se modifient, la vie végétative semble ne plus obéir au même courant, et des tendances différentes dirigent leurs jeunes esprits; ces divergences se prononcent de plus en plus tous les jours, et lorsque la fonction génératrice apparaît, ces dissemblances se montrent plus prononcées et plus caractéristiques : chez la jeune fille, une hémorrhagie périodique se produit; les seins se développent, leurs mamelons deviennent plus larges et plus gros; l'auréole, qui était rosée chez les blondes et jaunâtre chez les brunes, devient, dans le premier cas, d'un rouge sale, et dans le second, d'un brun plus foncé; le mont de Vénus acquiert plus d'élévation et de largeur ; les poils qui le garnissent deviennent plus roides, plus frisés et plus foncés en couleur; chez l'homme, les formes perdent leurs contours et deviennent anguleuses; la barbe croît à la figure, et des poils se montrent à la poitrine, aux aisselles et sur les membres; la voix devient grave, la marche plus assurée, et la raison tempère la fougue de l'imagination.

Et la preuve que tous ces changements sont dus à l'éveil de la fonction génératrice, c'est que, chez les castrats, le système adipeux l'emporte sur le système musculaire, et conserve aux formes extérieures ces contours moelleux qui sont l'apanage de la femme; leur figure ne se garnit pas de barbe, et les poils manquent aussi ou sont rares et mal plantés aux autres parties du corps; chez la femme stérile, au contraire, par atrophie ou absence congénitale des ovaires, des poils naissent sur la lèvre supérieure et au menton, et ses habitudes extérieures ont tellement perdu le cachet du sexe féminin, qu'elles lui ont valu chez les anciens le nom de *virago*, et chez nous celui d'*hommasse.*

Des changements analogues, mais en sens contraire, ont également lieu lorsque la fonction génératrice est éteinte. Chez les deux sexes, les formes gracieuses qui les distinguaient s'effacent peu à peu sous des rides nombreuses; les cheveux et les poils accusent l'affaiblissement des forces vitales par leur chute ou leur changement de couleur; les fonctions digestives, plus languissantes, ralentissent la circulation et diminuent, par conséquent, la caloricité (1) ; l'intelligence s'affaiblit à son tour, et quand la décrépitude est assez avancée, et quand sont éteints tous les signes distinctifs de l'un et l'autre sexe, l'homme et la femme *tombent en enfance*, selon l'heureuse expression populaire, c'est-à-dire dans cet état amorphe où les deux sexes se confondent dans un mutuel oubli de leurs attributs.

Malgré ce tableau ébauché à grands traits, on doit comprendre le rôle important que joue la fonction génératrice dans l'histoire de l'homme : une fonction qui tient ainsi sous sa dépendance l'accroissement et le dépérissement de l'organisme doit avoir avec toutes les autres fonctions des rapports intimes qui établissent entre elles des influences réciproques.

Ce sont ces rapports que je me propose d'examiner dans ce chapitre.

Je les étudierai d'abord au point de vue des fonctions de la vie organique, comme aurait dit Bichat, ou de la vie plastique, comme dit Burdach ; et je terminerai par l'examen des relations de la fonction génératrice avec les fonctions de la vie animale.

§ I. — Rapports avec la vie organique.

A. *Nutrition.* — « La nutrition et la génération, dit Burdach, sont des directions opposées de la vie. Cependant il y a sympathie entre elles. Une nutrition abondante et une bonne digestion sont des circonstances favorables à la procréation, car la formation de l'individualité est la condition nécessaire de toute formation dirigée dans les intérêts de l'espèce. Le défaut de nutrition commence par suspendre la sécrétion du sperme et éteindre les désirs ; puis les testicules commencent par se flétrir. La fécondité dépend aussi de la nutrition, car elle est plus grande quand la nourriture abonde ou chez les animaux qui trouvent facilement à se nourrir, ceux par exemple qui habitent la mer (1). »

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(1) Voy. Reveillé-Parise, *Traité de la vieillesse, hygiénique, moral et philosophique*. Paris, 1853, p. 52.

Il ne faut pas ici confondre la nutrition avec un résultat quelquefois exagéré de cette fonction, le développement trop considérable du tissu graisseux, car leur influence sur la fonction génératrice est complétement opposée.

Cette réserve admise, doit-on accepter comme expression de la vérité les paroles de Burdach? Je ne le pense pas. Sans chercher mes exemples dans les hautes classes de la société, où le luxe, la paresse et mille autres causes d'innervation peuvent masquer l'action de la nutrition, je citerai la fécondité proverbiale des paysans et du peuple, qui ont une nourriture souvent insuffisante et quelquefois malsaine. L'Irlande, les contrées les plus pauvres de l'Allemagne et de la Russie fournissent toutes les années, sans s'amoindrir et s'éteindre, des contingents considérables à l'émigration.

Cette influence d'une nutrition trop abondante sur la fonction reproductrice n'est pas spéciale à l'espèce humaine ; elle se retrouve dans l'histoire de tous les êtres organisés, et l'industrie l'a su mettre à profit pour multiplier outre mesure certaines espèces dont elle tire parti : « Les étangs de la Sologne, dit le docteur Alex. Mayer, sont si favorables à la croissance des carpes, que la rapidité du développement de leur taille — LUXE — les rend tout à fait inféconds, et qu'ils sont obligés, eux propriétaires, *pour conserver de la graine* de leur poisson, d'avoir des *carpières de misère*, où ils tiennent les carpes exclusivement destinées à la reproduction. Ces carpières spéciales à la reproduction sont d'étroites pièces d'eau où les carpes femelles sont entassées par myriades, sont les unes sur les autres, meurent de faim, en un mot. Ne pouvant profiter, ces carpes pondent; et ces pondeuses fécondes ont été baptisées en Sologne du nom significatif de *peinards* (1) »

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(1) Burdach, *Traité de physiologie*, trad. par Jourdan. Paris, 1837, t. V, p 11.

Cependant, que l'on n'exagère pas ma pensée : je suis loin de prétendre que des privations prolongées, que des *carpières de misère*, pour me servir de l'expression des habitants de la Sologne, sont des conditions heureuses, sinon les plus favorables à la reproduction; non, telle n'est pas ma manière de voir; mais je suis convaincu qu'une nourriture frugale, grossière même, mais suffisante, est infiniment préférable, pour le but à atteindre, que ces raffinements culinaires inventés par les palais blasés, et que ces excès de table dont toute civilisation avancée donne le triste spectacle. On a depuis longtemps fait la remarque que Rome eût péri avant la fin de la République, si les étrangers n'eussent continuellement comblé les vides que son intempérance creusait sans cesse. Mais il ne suffit pas, pour que la faculté procréatrice atteigne sa plus haute énergie, que la nourriture réunisse les conditions que je viens d'énumérer; il faut encore que les fonctions digestives s'accomplissent dans leur intégrité. Je dirai ailleurs, alors que j'exposerai les causes de l'impuissance, combien les affections de l'estomac et des intestins influent sur l'acte de la copulation, et je raconterai l'histoire d'un garçon de café, soumis à mon observation, qui, sous l'empire d'un état morbide de l'estomac, était incapable d'entrer en érection, et qui, cet état s'améliorant, ne pouvait exercer le coït que dans les positions où l'épigastre était soustrait à toute espèce de pression.

De son côté, la génération influe aussi sur la nutrition. L'exercice de cette fonction, quand il est modéré et en rapport avec les forces de l'individu, aiguise l'appétit et favorise la nutrition ; quand au contraire il franchit les bornes tracées par l'âge et la constitution, les fonctions digestives s'affaiblissent, l'estomac languissant ne s'assimile plus les portions alibiles des aliments, et l'émaciation générale est la conséquence fatale de cette perversion de la nutrition. Qui ne connaît les suites funestes des excès de l'onanisme ou du coït?

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(1) Alex. Mayer, *Des rapports conjugaux considérés sous le triple point de vue de la population, de la santé et la morale publique*, 6e édit. Paris, 1874, p. 223.

La suppression de la faculté génitale, à son tour, retentit profondément sur la nutrition : elle la favorise, l'exaspère même ; les castrats sont ordinairement chargés d'embonpoint, et les hommes qui deviennent inhabiles à la procréation, à la suite d'une vie licencieuse, ne tardent pas à engraisser. On dirait que la force vitale, ne pouvant plus s'échapper par l'émonctoire dont le siége est dans les organes génitaux, se réfugie tout entière dans les facultés nutritives, et qu'alors elle emploie à produire toute l'énergie qu'elle mettait à dépenser.

B. *Circulation* ; *respiration*. — La respiration, selon l'heureuse expression de Burdach, étant une tendance du sang à se porter au dehors pour entrer en conflit avec l'atmosphère, nous réunissons dans le même paragraphe les fonctions du cœur et celles du poumon.

L'une et l'autre ont des rapports directs avec la génération.

La première, par le calorique qu'elle développe, accompagne et favorise les actes génitaux, et tout le monde sait que la chaleur animale augmente à l'époque de la puberté. Bien plus, la vie du sang est exaltée par la faculté procréatrice. D'après les expériences de Barruel (1), Wedekind (2) et Raspail (1), l'odeur qu'exhale la vapeur de ce liquide est plus forte chez l'homme que chez la femme et l'enfant, et présente un caractère particulier que l'on ne trouve pas chez les vieillards et les individus inhabiles à la fécondation; elle pénètre la chair des animaux, et nul n'ignore combien elle est caractéristique dans la chair du bouc, du taureau, et en général de tous les animaux qui n'ont pas été coupés. Quelques-uns ont prétendu que cette odeur *sui generis* était due à l'absorption de la semence; mais Burdach, sans repousser entièrement cette explication, attribue au phénomène une autre cause et ajoute : « Ce qui prouve, au contraire, que la fonction procréatrice perfectionne la formation du sang en général, c'est que l'interruption de la menstruation, sa non-apparition, le défaut de satisfaction de l'instinct génital et l'onanisme amènent la chlorose, état dans lequel le sang a une teinte pâle et sale; le caillot est friable, la fibrine ressemble à l'albumine, et les sels existent en moins grande quantité, de même que probablement aussi le fer. Lorsque l'activité des organes génitaux s'éveille et suit une marche régulière, notamment sous l'influence du mariage, le sang acquiert sa constitution normale (2). »

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(1) Barruel, *Mémoire sur l'existence d'un principe propre à caractériser le sang de l'homme et celui des diverses espèces d'animaux*, inséré dans les *Annales d'hygiène*. Paris, 1829, t. I. p. 267 ; t. II, p. 217.

(2) Wedekind, *Moyen de distinguer le sang humain du sang des animaux* (*Annales d'hygiène*, 1^{re} série, 1834, t. XI, p 205).

De même que l'exercice modéré de la génération exerce une heureuse influence sur l'organisme, en éliminant le superflu de la substance, et que les excès de coït et les abus de l'onanisme amènent des palpitations et la syncope, de même tout épuisement, tout état valétudinaire fait cesser l'instinct sexuel, à moins que celui-ci ne soit stimulé par une irritation maladive ou contre nature.

Les rapports réciproques des organes de la génération et de l'appareil de la respiration, tant au point de vue physiologique que pathologique, sont très-remarquables : la respiration est haletante et précipitée sous l'empire de l'instinct génital, et les poumons exécutent des mouvements désordonnés pendant l'acte du coït. Les plaisirs de l'amour, les grossesses trop souvent répétées et un allaitement trop prolongé déterminent souvent la formation de tubercules dans les poumons, tandis que l'onanisme n'est pas moins souvent accompagné de l'asthme; la suppression des règles est fréquemment la cause de douleurs de poitrine et de toux; la blennorrhagie syphilitique est quelquefois annoncée par des douleurs dans la trachée-artère et le larynx, et l'hémoptysie est souvent arrêtée par des applications froides sur les organes génitaux.

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(1) Raspail, *Nouveau système de Chimie organique*. Paris, 1838, t. III, p. 209 et suiv.

(2) Burdach, *Physiologie*, t. V.

L'influence de la respiration sur la fonction génitale est également manifeste : les organes génitaux ne se développent pas ordinairement chez les individus atteints de cyanopathie, et Nasse remarque que cette affection retarde aussi les règles, en diminue l'abondance ou même les empêche de s'établir; tout le monde sait que la pendaison et la strangulation déterminent l'érection et l'éjaculation, qui a même lieu quelquefois après la mort; enfin Meckel a noté qu'aux altérations du larynx dont nul n'ignore les relations physiologiques, à l'époque de la puberté, avec l'appareil génital, se joignent quelquefois l'endolorissement et l'atrophie des testicules, accidents qui augmentent à mesure que la maladie primitive fait des progrès.

Je ne poursuivrai pas l'énumération de ces rapports pathologiques, parce que j'aurai à y revenir plus longuement dans une autre partie de cet ouvrage; mais ceux que j'ai énoncés suffisent à montrer quelles étroites relations unissent la faculté génitale et les fonctions circulatoire, respiratoire et vocale.

C. *Excrétions.* — Divers appareils d'excrétion existent dans l'organisme humain; tous ont plus ou moins de rapport avec la faculté génitale; mais je n'examinerai ici que les principaux, qui sont : excrétion rectale, excrétion vésicale ou urinaire et excrétion cutanée; je dirai aussi quelques mots des relations génésiaques avec les parties du corps qui, plus que d'autres, portent en elles le caractère d'excrétions organisées, comme les os, les poils et les cheveux.

Le voisinage du rectum et des organes génitaux est, pour le praticien, d'un grand secours, non-seulement pour le diagnostic de certaines maladies de ces derniers organes, mais encore au point de vue thérapeutique, car toutes les substances introduites dans le rectum, par lavement ou sous toute autre forme, réagissent sur l'appareil génital; on verra plus loin le parti que j'ai plus d'une fois tiré de cette indication anatomique. De plus, la dureté des matières fécales retenues dans le rectum est souvent la cause d'une érection fatigante et même d'une espèce d'éjaculation chez les individus affaiblis par les excès. Le retentissement des affections de la matrice sur le rectum et de celles du rectum sur la matrice est si généralement connu, qu'il me paraît simplement nécessaire de rappeler ce point de pathologie médico-chirurgicale.

L'appareil urinaire a, plus encore que la fin de l'appareil digestif, des rapports intimes de voisinage avec l'appareil génital; l'un et l'autre ont, chez l'homme du moins, un organe commun d'excrétion, le canal de l'urèthre, et, chez les deux sexes, de telles sympathies naissent de leur juxta-position qu'il est rare, comme nous le verrons ailleurs, que l'état morbide de l'un ne trouble pas les fonctions de l'autre.

Lorsque les désirs vénériens se font sentir, la peau devient le siége d'une transpiration plus abondante et imprégnée d'une odeur spéciale. Chez les castrats, la peau est molle, pâle, lisse, rarement sujette aux exanthèmes, et produisant une transpiration aigrelette.

Les os, de leur côté, dont la formation cesse lorsque commence la sécrétion testiculaire, répandent une odeur spermatique quand on les lime ou qu'on les scie.

Les poils du pubis sont ordinairement, dans les deux sexes, eu égard à leur quantité, à leur couleur et à leur frisure, un indice de l'énergie de la faculté génitale. La barbe, qui ne se développe pas chez les castrats, et qui est peu fournie et tombe de bonne heure chez les individus qui ont subi l'opération à l'époque de la puberté, est implantée avec force et ne disparaît que fort rarement, même dans un âge avancé, chez les personnes qui jouissent de toute leur puissance virile. Tandis que les poils à la lèvre supérieure et au menton sont pour l'homme un signe de virilité, ils sont quelquefois chez la femme, ainsi que je l'ai déjà dit, un signe de stérilité, surtout quand leur présence coïncide avec la perte des autres attributs extérieurs du sexe féminin. On prétend, mais je n'ai pu m'assurer jusqu'à quel point cette assertion est fondée, que l'habitude de se raser stimulait les organes génitaux.

§ II. — Rapports avec la vie animale.

La génération, dont on a fait un sens spécial sous le nom de *génésique*, appartient essentiellement à la vie animale ou de relation ; mais tandis que les autres sens entrent en exercice sous l'influence d'une excitation extérieure, comme la lumière pour la vue, les odeurs pour l'odorat, etc., le sens génital n'exécute ses fonctions que sous l'empire d'une excitation interne que l'on nomme instinct, désir vénérien. Cependant les excitations extérieures ne sont pas sans action sur l'éveil du désir ; quelquefois même celui-ci, inerte ou paresseux, ne sort de son apathie que par la vue d'une belle femme ou par des attouchements licencieux ; mais, je le répète, l'érection de la verge et celle du clitoris, et par suite le plaisir, chez les deux sexes, obéit entièrement au sens intime, à l'âme, à l'imagination, en un mot à la partie intellectuelle de notre être. La femme violée ou contrainte au coït avec un homme que son cœur repousse est passive dans l'acte qu'elle laisse accomplir sans volupté ; cependant le stimulus extérieur ne lui a pas manqué ; les frottements de la verge contre ses parties génitales ont eu lieu, et ces frottements qui, en d'autres circonstances, l'eussent plongée dans le ravissement, la trouvent maintenant froide et insensible, parce que l'incitation morale lui a fait défaut. On a dit que les préludes du coït valaient mieux que le coït lui-même, et cela est vrai jusqu'à un certain point, parce que la perte de la semence d'un côté, et l'*arrosement du museau de tanche par le sperme* de l'autre, en noyant la raison dans la tempête qu'ils excitent, lui enlèvent la conscience du stimulus intérieur, et ne lui laissent qu'une conception troublée et affaiblie des sensations vénériennes.

L'âme, le sens intime, l'intellect, comme on voudra l'appeler, et qui comprend l'imagination, les facultés attractives et répulsives, a non-seulement des rapports très-intimes avec le génésique, mais encore est indispensable à son exercice. Ces rapports, auxquels je reviendrai tout-à-l'heure, ne se bornent pas à la partie immatérielle de notre âme ; ils existent aussi avec sa partie matérielle, si je puis ainsi dire, avec le cerveau, que les philosophes et les physiologistes s'accordent à lui donner pour siége.

Par l'exaltation momentanée que révèlent les facultés morales sous l'empire des désirs vénériens ou du coït, on peut conclure que le cerveau prend une large part à l'acte de la copulation, et que, pendant l'exercice de cette dernière, il est le siége d'une congestion passagère, d'un afflux plus considérable de sang ; c'est ce qui arrive assez fréquemment chez les vieillards, pour qui des épanchements sont plus à craindre, à cause de l'inertie de réaction de la force vitale. De plus, les excès de coït et l'onanisme sont presque toujours suivis de céphalalgie, de vertiges, d'hallucinations, quelquefois même de dégénérescence du cerveau, notamment de la suppuration et de l'induration. La compression des testicules occasionne une stupeur qui peut devenir mortelle, comme des faits trop nombreux l'ont prouvé, et qui a été mise à profit pour se rendre maître des animaux les plus indomptables. Le cerveau lui-même ne réagit pas moins sur la fonction génératrice : on a vu la lubricité être produite par l'enfoncement des os du crâne, par l'hydrocéphale ou le ramollissement du cerveau, tandis que l'impuissance venait à la suite de plaies de tête ou de la suppuration de l'encéphale; enfin Burdach assure que l'hydropisie chronique des ventricules occasionne l'imperfection du développement des organes génitaux, le peu d'abondance des règles et l'absence de désirs vénériens (1).

Mais de tous les points du centre encéphalique, le cervelet est celui qui entretient avec la fonction génitale les rapports les plus intimes. C'est lui que Gall avait noté comme le siége du sens génésique; et, en effet, le développement du cervelet et des muscles de la nuque est presque toujours en proportion directe avec l'énergie de la faculté procréatrice, car tandis que l'on trouve la nuque large et bombée chez les individus qui font preuve d'une grande virilité, on la constate étroite et aplatie chez les hommes et les animaux qui ont subi la castration.

Plusieurs fois je suis parvenu à calmer le priapisme ou à éteindre des érections fatigantes au moyen d'applications froides à la nuque, tandis que, d'autre part, Serres a démontré, par une série d'observations, qu'un épanchement du sang au cervelet s'annonce par une turgescence des parties génitales, qui est parfois accompagnée de pollutions, et qui dure même après la mort. La pathologie est remplie d'exemples de pareilles sympathies, et Burdach prétend même que les ulcères de la matrice font naître des douleurs à l'occiput et des spasmes dans la nuque (1).

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(1) Burdach, *Vom Bau und Leben des Gehirns*. Leipzig, 1825, t. III, p. 75.

La moëlle épinière, elle aussi, entretient avec la faculté génitale les relations les plus intimes. Depuis Hippocrate, qui l'a si admirablement décrite, tout le monde connaît la consomption dorsale qu'entraînent les excès vénériens et l'onanisme. La suppression des règles détermine quelquefois dans cet organe des congestions, des phlegmasies, des épanchements de sang; et les organes génitaux se flétrissent lorsque le cordon rachidien est frappé de phthisie. Ces relations, qu'indiquent les notions anatomiques les plus superficielles, sont quelquefois invoquées par la débauche et la vieillesse avides de luxure, qui cherchent, dans la flagellation, une énergie et des voluptés qui les fuient.

Les sens, qui sont sous une dépendance si complète du cerveau, partagent avec lui les relations qu'il nourrit avec la fonction génitale.

La vue, en portant à l'âme l'image de l'autre sexe, éveille et exalte le sens génésique. Les excès vénériens et l'onanisme diminuent la faculté visuelle, dilatent la pupille, ternissent le regard, et cernent l'œil d'un cercle bleu et profond. Au moment du coït, la vue acquiert une telle sensibilité que la moindre lumière l'impressionne d'une manière désagréable.

L'odorat exerce sur les organes génitaux une action que l'on ne peut méconnaître : l'odeur qui s'exale de ces organes est, pour les deux sexes, un stimulus puissant; les courtisanes et les roués se servent, avec avantage, de certains parfums que je nommerai volontiers aphrodisiaques, tels que la vanille, l'œillet, le girofle, etc.

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(1) Burdach, *Loc. cit.*, p. 423.

L'ouïe agit quelquefois sur la fonction génitale d'une manière étrange. J'ai connu une personne dont le sens génésique s'éveillait au seul frôlement d'une robe de soie, et une autre à qui ce même frôlement produisait un effet tout contraire; il est vrai de dire que chez ce dernier individu la sensibilité générale était douloureusement affectée par la vue, le toucher ou le bruit de la soie, comme quelques personnes le sont par la peau veloutée de la pêche ou le brillant raboteux du satin. L'ouïe, après le coït, supporte avec peine le moindre bruit, et les excès vénériens déterminent des bourdonnements d'oreille et quelquefois la surdité.

Le goût n'a pas de relations directes avec la génération, mais ses organes accessoires, tels que les glandes salivaires et parotides, la langue et les lèvres, en entretiennent de très-intimes : tous ces organes entrent en turgescence quand les désirs vénériens se font sentir; le développement des glandes salivaires est en rapport avec l'énergie génitale, et leur sécrétion augmente pendant le coït et à l'époque des règles. Burdach cite l'observation d'une mélancolie produite par des désirs non satisfaits, et guérie par la salivation. Souvent avec l'orchite, quelle que soit sa nature, apparaît l'inflammation des parotides. Desportes assure que l'angine couenneuse amène parfois un état d'orgasme des parties génitales, même avant la manifestation ou après la disparition de la faculté procréatrice (1).

Le toucher a une telle influence sur le sens génésique, qu'il est, pour ainsi dire, le compagnon inséparable de la copulation, dont les baisers sont les préludes, le complément et la fin. La main de l'homme caresse avec volupté les seins et les formes arrondies de la femme, et ces attouchements envoient à l'âme des deux conjoints des excitations plus vives, qui appellent la volupté et hâtent la formation d'un nouvel être.

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(1) Desportes, *Revue médicale*, 1828, t. III, p. 184.

Enfin, et pour en finir avec les organes dépendant des centres nerveux, l'appareil musculaire jouit de sa plus grande énergie pendant l'existence de la faculté procréatrice : sans force chez l'enfant et affaiblis chez le vieillard, les muscles sont flasques et pâles chez le castrat qui, comme triste compensation, est à jamais exempt de la goutte.

L'âme, dont j'ai déjà parlé tout à l'heure, a toutes ses facultés en rapports intimes avec la génération. L'acte procréateur trouve dans la joie et dans toutes les dispositions à l'allégresse une excitation heureuse, tandis qu'il est en quelque sorte paralysé par les chagrins, les soucis, la crainte, la frayeur et les préoccupations trop prononcées de l'esprit.

Le pouvoir de l'imagination est ici immense : c'est par elle que naissent les désirs vénériens, que se produit l'érection, et que s'accomplissent plusieurs autres actes de l'appareil générateur. Pichon rapporte qu'une femme de quarante-huit ans, dont l'âge critique avait passé depuis quatre ans et dont la sensibilité était fort exaltée, fut prise, en assistant à l'accouchement long et pénible d'une de ses sœurs, de douleurs semblables à celles de la parturition; que quelques heures après se déclara une hémorrhagie par les parties génitales, qui dura pendant plusieurs jours, et que trois jours après la cessation de cet écoulement les seins non-seulement se tuméfièrent, mais encore fournirent une sécrétion de lait (1). Si la puissance de l'imagination n'est pas en rapport direct avec l'énergie de la génération, on peut dire que la première ne peut guère exister sans la seconde, car on ne connaît aucune production intellectuelle portant le cachet de l'originalité, qui soit émanée d'un eunuque.

La raison, cette faculté mère, si je puis ainsi m'exprimer, dans laquelle viennent se confondre la mémoire, le jugement, la volonté, etc., entretient elle aussi des relations réciproques avec la faculté génitale. Les imbéciles, les crétins surtout, s'adonnent ardemment à l'onanisme (1), et les excès vénériens ou la masturbation conduisent ceux qui s'y abandonnent tantôt à l'imbécillité, tantôt à la manie du suicide, et tantôt à la démence (2).

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(1) *Archives générales de médecine*, t. XVII, p. 125.

Le caractère n'est pas à l'abri de l'influence de la génération : l'impuissant et le masturbateur tombent dans une mélancolie profonde, deviennent timides, sont faibles de volonté, montrent de l'indifférence pour tout, et nourrissent un amer dégoût de la vie (3) ; les eunuques sont pusillanimes, lâches et ne savent pas mourir ; Richerand a fait la remarque que les amputés de la verge sont pris d'une mélancolie qui les dispose éminemment aux fièvres de mauvais caractère, et les conduit souvent à la mort, tandis que les hommes auxquels on coupe un membre supportent gaiement cette mutilation (4).

Enfin, et pour en finir, le génésique développe chez les deux sexes le sentiment de la sociabilité, puisqu'il exige le rapprochement de deux individus. C'est également sous son influence que se perfectionnent les peuples, et que la civilisation marche toujours vers de nouvelles et plus brillantes destinées.

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(1) Esquirol, *Maladies mentales*, t. II, p. 353 et suiv.

(2) Esquirol, *Maladies mentales*, t. II, p. 219.

(3) Fournier, *De l'onanisme, causes, dangers, inconvénients pour les individus, la famille et la société*, 2ᵉ édit. Paris, 1876.

(4) Richerand, *Diction. des sciences médicales*, t. XL, p. 193.

CHAPITRE IV

CIRCONSTANCES DIVERSES QUI INFLUENT SUR LE DÉVELOPPEMENT ET L'EXERCICE DE LA GÉNÉRATION.

Ces circonstances sont de deux sortes : *A*, celles qui sont inhérentes à l'individu ; *B*, celles qui sont en dehors de lui. C'est dans cet ordre que je vais les examiner.

§ I. — Circonstances inhérentes à l'individu.

Les principales de ces circonstances sont l'âge, la constitution, le tempérament, les passions, les habitudes, le régime, les professions et les travaux.

Age. — La vraie maturité procréatrice, dit Mende (1), est l'état de la vie dans lequel les fonctions génitales peuvent s'accomplir sans porter atteinte à la santé de l'individu, ni sous le rapport physique, ni sous le point de vue moral, et de telle sorte, en outre, que le caractère de l'espèce soit imprimé aux produits de la manière à la fois la plus profonde et la plus complète. En un mot, c'est l'époque où l'individu, parvenu au point de pouvoir se conserver lui-même, devient apte à concourir au maintien de l'espèce.

Cette époque n'est pas celle de la puberté. Une fonction, surtout la génération, n'acquiert pas toute son énergie au moment de son apparition ; il faut, comme l'observe judicieusement Burdach, que la puissance existe pendant quelque temps sans entrer en exercice, pour qu'elle puisse se développer parfaitement, déployer en entier ses effets, et se répandre sur tout l'ensemble de l'organisme. Chez les animaux, la nature a pris soin d'empêcher l'accouplement immédiatement après l'éveil du sens génital : sans parler de la loi du plus fort, qui donne aux mâles seuls complétement développés la puissance de repousser les rivaux et de conquérir la femelle, je citerai l'exemple du cerf qui à trois ans entre bien en rut, mais qui est dépourvu de la voix propre à attirer la femelle ; cette voix commence à se faire entendre l'année suivante, mais faible encore, et ce n'est qu'à cinq ans qu'elle acquiert toute sa force.

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(1) Mende, *Handbuch der gerichtlichen Medicin*. Leipzig, t. IV, p. 212.

A la puberté, c'est-à-dire à l'époque de l'éveil du sens génital, l'érection chez l'homme semble ne pas être complétement encore sous l'empire de l'âme ; elle se produit, qu'on me passe le mot, à tort et à travers, sans but bien déterminé et sous l'influence de circonstances diverses ; chez la femme, le plaisir ne paraît pas atteindre les limites de la volupté, et ce n'est pas sans raison que les hommes véritablement sensuels préfèrent la femme de vingt à trente ans.

D'un autre côté, les enfants dont les parents sont trop jeunes, la mère surtout, ont rarement une complexion robuste. Comme toutes les autres, la faculté procréatrice s'accroît jusqu'à un certain point par l'exercice, et l'on a remarqué que les produits d'une conception trop hâtive sont fréquemment d'une constitution plus frêle et plus délicate, toutes choses égales d'ailleurs, que ceux qui correspondent au milieu de la vie productive ; on a également noté que le premier accouchement a ordinairement lieu avant l'expiration complète du temps de la grossesse. Enfin les glandes mammaires participent aussi à cette inertie de l'appareil génital, et sécrètent beaucoup moins de lait qu'à une époque ultérieure de la vie utérine.

Lorsque la puissance a suffisamment accru l'énergie de la fonction génitale, l'homme et la femme deviennent nubiles ; c'est alors que les organes dans toute leur force accomplissent la génération sans péril pour l'individu et sans dommage pour l'espèce. La nubilité, qu'il faut avoir soin de distinguer de la puberté, commence à vingt ans pour les femmes et à vingt-quatre ans pour les hommes ; l'usage la recule même presque toujours de quelques années, et les législations ont varié à l'infini pour la fixation de l'époque du mariage. Lycurgue voulait que les hommes se mariassent à trente-sept ans et les femmes à dix-sept ; Platon prescrivait aux premiers l'âge de trente ans, et aux autres celui de vingt ; Solon fixa le mariage des hommes à trente-sept ans, et à Rome il ne leur fut, pendant quelque temps, permis de se marier qu'à quarante ans. Aujourd'hui les lois sont moins sévères, mais les mœurs et les usages font qu'en moyenne, en France du moins, les hommes se marient de trente à quarante ans, et les femmes de dix-huit à vingt-six.

La faculté procréatrice s'éteint, chez la femme, avec la menstruation ; je ne reviendrai pas ici sur ce que j'ai dit précédemment de cette fonction. Chez l'homme, la retraite de la même faculté est moins liée que chez la femme à une époque déterminée, et ne présente pas, comme chez l'autre sexe, des accidents plus ou moins funestes. En général, à partir de la cinquantième année, la faculté génitale diminue, et cet abaissement va en augmentant graduellement jusqu'à la soixante-dixième, où les désirs ont même en général disparu. Je dirai ailleurs les caractères que présente le sperme des vieillards, mais on peut déjà pressentir que les produits de la vieillesse sont cacochymes, délicats, et plus que tous les autres soumis à l'influence des causes morbifiques.

Constitution ; tempérament. — Bien que les mettant sous la même rubrique, je dois me garder de confondre la constitution et le tempérament, comme l'ont fait et le font encore quelques auteurs. La constitution, éminemment sous l'empire de la plasticité, exprime le degré de développement et d'activité des organes, tandis que le tempérament désigne la prédominance et l'influence d'une partie de l'organisme sur toutes les autres, coïncidant d'ailleurs avec un état parfait de santé.

On comprend dès lors quels sont, d'un côté la constitution, et de l'autre le tempérament qui favorisent et secondent le plus heureusement l'éveil et l'exercice de la génération.

La faculté procréatrice, par les lois mêmes qui président à sa destinée, ne doit entrer en action qu'après l'entier développement de tout l'organisme, ainsi que je l'ai dit en parlant de la nubilité, et s'éteint lorsque la vitalité générale diminue, lorsque les forces plastiques et animales commencent à perdre de leur intensité; par conséquent, il doit exister une relation intime entre la fonction génitale d'une part et la constitution de l'autre, qui marque précisément le degré de développement et d'activité de toutes les parties de l'organisme.

C'est ce qui arrive en effet.

Les individus dont toutes les fonctions s'exécutent non-seulement avec régularité, mais encore avec énergie, comme ceux qui sont doués d'une constitution athlétique, sont les plus aptes tout à la fois à la copulation et à la fécondation; les Messalines choisissent de préférence les hommes de cette trempe, et les amis de la santé publique doivent souhaiter à tous les enfants des pères et des mères aussi heureusement dotés.

Les constitutions faibles, cacochymes, qu'elles soient le résultat d'un vice héréditaire ou d'un mal acquis, retentissent profondément sur la génération. Moins tourmentées de désirs, moins impressionnables aux sensations voluptueuses, elles semblent accomplir l'acte, non comme un plaisir, mais comme un devoir, et cette nonchalance, cette froideur dans le coït est incapable d'imprimer une énergie bien vive au produit de la conception, sans parler des affections héréditaires que cette absence de vitalité chez les parents est loin de contre-balancer et de détruire.

Quelquefois même l'apathie générale se communique à la fonction génitale elle-même, et alors, selon qu'elle frappe plus particulièrement les organes de la copulation ou ceux de la fécondation, elle détermine l'impuissance ou la stérilité. Ce n'est pas ici le lieu de parler de ces états pathologiques, et je renvoie le lecteur aux chapitres de cet ouvrage qui les concernent.

Au point de vue génital, plus encore que sous tout autre rapport, le tempérament joue un rôle de la plus haute importance ; c'est par le mot tempérament que le monde exprime l'aptitude ou l'inhabilité aux plaisirs de Vénus : Cette femme n'a point de tempérament, dit-on ; cette autre a un tempérament de feu.

L'observation journalière vient confirmer la vérité du langage populaire ; quoiqu'il soit difficile d'établir une ligne de démarcation bien tranchée entre les tempéraments, on les distingue d'ordinaire par une habitude extérieure particulière, par un état spécial des fonctions physiques et des facultés morales, par un genre propre de maladies, en un mot, par un ensemble de phénomènes physiologiques, psychiques et pathologiques faciles à saisir et à classer.

Les anciens, dont la délicatesse d'observation était infinie, avaient admis quatre tempéraments primordiaux : le *bilieux* ou *colérique*, le *sanguin*, le *mélancolique* ou *atrabilaire*, et le *pituiteux* ou *phlegmatique*. Mais comme la prédominance de l'activité porte rarement sur un seul système, il suffit de combiner ces expressions deux à deux ou trois à trois pour peindre toutes les nuances que présente la nature.

Afin de mieux faire saisir l'empire des tempéraments sur la génération, je rappellerai les considérations que j'ai déjà présentées sur l'action des climats et des âges, en exposant les ingénieux rapprochements que les anciens établissaient entre ces diverses conditions d'influence. A chacun des tempéraments primordiaux que j'ai énoncés plus haut, nos pères rattachaient un des quatre âges de la vie, une des quatre saisons de l'année et un des climats du globe : au tempérament bilieux correspondaient l'âge adulte, l'été et les climats chauds; le tempérament sanguin était celui de la jeunesse, du printemps et des pays tempérés; le tempérament atrabilaire était celui de l'âge mûr, de l'automne et des contrées équatoriales; enfin, le tempérament pituiteux était celui des vieillards, de l'hiver, et des pays humides et froids.

Ces rapprochements, grâce aux notions qui précèdent, expliquent mieux que je ne le pourrais faire l'influence des tempéraments sur la génération; ainsi la mollesse des tissus et l'inertie des fonctions qui caractérisent le tempérament lymphatique étant peu compatibles avec les ardeurs de l'amour, les anciens l'avaient fait l'apanage des vieillards, dont la puissance génératrice est nulle; de l'hiver, dont les frimas glacent les désirs, et des pays froids et humides, dont l'action est tout aussi débilitante que celle de l'hiver. Au contraire, l'âge adulte, l'été, les climats chauds, toutes choses favorables aux plaisirs sexuels, sont le propre de l'homme bilieux, « dont le tempérament est si chaud et si amoureux, qu'il aurait beau avoir la vertu des personnes les plus saintes, sa nature lui donnera toujours une pente à l'amour des femmes. On aurait plutôt éteint un grand feu avec une goutte d'eau, et l'on obligerait plutôt un fleuve rapide à remonter vers sa source, que de corriger l'inclination de cet homme (1). »

Avec de pareilles données, il est facile d'établir la gradation des tempéraments qui éveillent et surexcitent la faculté procréatrice, et de noter ceux, au contraire, qui tempèrent ou éteignent les désirs de l'amour.

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(1) Venette, *Tableau de l'amour conjugal*, 2^e partie, chap. IV, art. I^{er}.

Facultés morales; passions. — Plus que toute autre partie de l'organisme, l'appareil génital subit l'influence du moral. En ce qui concerne les facultés intellectuelles, on peut dire, toutes choses égales d'ailleurs, que l'étendue de l'esprit et l'ardeur de l'imagination agissent plus vivement sur le sens génital que les intelligences bornées et paresseuses ; c'est à ce titre, plusencore peut-être qu'au point de vue de leur vanité, que les femmes recherchent l'amour des artistes, des savants et des littérateurs ; malheureusement, les travaux abstraits et les méditations auxquels cette classe d'hommes est soumise, surtout les savants, diminuent beaucoup l'heureuse influence de leur esprit, et frappent quelquefois même leurs organes sexuels d'impuissance et de stérilité, ainsi que nous le verrons ailleurs (1).

Les sentiments de l'âme exercent sur la génération un empire à peu près absolu, et l'on ne comprendrait pas qu'il en fût autrement, puisque c'est dans l'âme que réside le consensus intime qui éveille et anime le sens génésique. Mais, de même que les sentiments ou les facultés de l'âme se peuvent ranger en deux groupes distincts et opposés, de même l'influence qu'ils exercent sur l'activité génitale est contraire ; car tandis que les facultés affectives la favorisent, les facultés répulsives en éteignent l'ardeur et en glacent les voluptés.

Les passions, qui ne sont que les facultés de l'âme surexcitées, élevées à une haute puissance d'expression, agissent dans le même sens que les facultés auxquelles elles répondent, mais seulement avec plus d'énergie et de vivacité.

Cependant cette énergie et cette vivacité des sentiments affectifs, qui sont sans contredit des excitants heureux du génésique, doivent être contenues dans de certaines limites. — Les extrêmes se touchent, dit-on. — Jamais maxime ne fut plus applicable qu'en cette circonstance. — Un amour violent, longtemps réprimé dans ses désirs, plonge tout l'organisme, au moment de sa réalisation, dans une espèce d'extase où l'âme, c'est-à-dire la partie immatérielle de notre être, semble concentrer en elle toute force et toute vitalité, et paraît oublier les organes qui lui servent d'ordinaire pour transmettre ses volitions. Le consensus s'est replié en lui-même, et comme le sens génital ne s'éveille qu'aux excitations de ce consensus, il faut attendre, pour que tout rentre dans l'ordre, que la surexcitation morale ait cessé, ou qu'elle soit revenue du moins au type normal de la simple excitation. Le plaisir qui suit cette détente générale et qui succède à cette impuissance momentanée est d'ordinaire plus ardent et la fécondation plus facile. « J'en sçay, dit Montaigne, que j'aurai plus d'une fois occasion de citer à propos de l'influence du moral sur le génésique, j'en sçay à qui il a servy d'y apporter le corps même, demy-rassasié, d'ailleurs, pour endormir l'ardeur de cette fureur, et qui, par l'aage, se trouve moins impuissant de ce qu'il est moins puissant (1). »

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(1). Reveillé-Parise, *Physiologie et hygiène des hommes livrés aux travaux de l'esprit*, Paris, 1853.

Habitudes. S'il est vrai que l'habitude soit une seconde nature, il est facile de comprendre, par ce que j'ai dit précédemment de la constitution, du tempérament et des facultés de l'âme, l'empire qu'elle peut exercer sur la génération.

Mais en dehors des habitudes physiques et morales dont je parlerai tout à l'heure, et qui modifient plus ou moins les prédispositions de l'organisme et les tendances de l'esprit, il est une habitude spéciale au sujet qui m'occupe, et qui doit par cela même fixer la première mon attention. Je donne à cette habitude l'épithète de *copulatrice*, parce qu'elle résulte de l'exercice longtemps prolongé du coït entre deux individus.

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(1) Montaigne, *Essais*, t I, p. 104, édit de 1793. Paris.

L'habitude copulatrice ne produit pas les mêmes effets sur toutes les personnes, ou du moins les manifestations de ces effets ne sont pas identiques dans tous les cas.

Le plus généralement, l'uniformité des rapports engendre une espèce de satiété qui enlève au consensus l'aiguillon de la nouveauté, et au plaisir le charme de l'imprévu ; en l'absence de ces excitants, le sens génital languit, devient paresseux, et se refuse quelquefois même à accomplir sa fonction. Quand un poëte a dit que l'amour mourait de nourriture, il a nécessairement voulu parler de l'habitude copulatrice, qui pousse tant de maris hors de la couche conjugale, et qui rompt tant de liens formés sous les plus favorables auspices.

Quelquefois, au contraire, l'habitude copulatrice produit un effet diamétralement opposé à celui que je viens de signaler ; non-seulement elle éveille les désirs et soutient l'éréthisme génital, mais encore elle glace toute ardeur génésique, et repousse tout excitant qui n'ont pas leur source dans la personne qui est l'objet de cette habitude. Je possède dans mes notes une curieuse observation qui trouvera ailleurs sa place, mais que je crois utile d'analyser brièvement ici, pour montrer jusqu'où peut aller l'empire de cette habitude. Marié à vingt-deux ans à une femme qu'il aimait profondément, M. X... devint veuf à l'âge de trente-sept ans, sans jamais avoir éprouvé aucune défaillance dans ses fonctions génitales et sans jamais avoir déserté la couche conjugale. La mort, en frappant sa femme, sembla avoir glacé ses organes génitaux, et malgré des désirs réels, il ne put, à partir de son veuvage, obtenir une érection suffisante pour le coït. C'est alors qu'il vint me consulter, et qu'il m'avoua qu'il n'obtenait une demi-érection qu'auprès des femmes qui, par leur tournure, la couleur de leurs cheveux et la forme de leur taille, lui rappelaient le mieux celle qu'il pleurait; de plus, ces demi-érections n'étaient possibles qu'au lit, alors que la femme était dans le simple appareil de la couche maritale. Mais l'illusion du malheureux ne pouvant aller plus loin, a cause de l'absence de ces mille petits riens qui, tous les jonrs répétés, engendrent l'habitude, l'érection s'arrêtait aussi, et le coït devenait impossible.

L'impuissance de ce malade tenait bien évidemment à la cause que je signale, car après une année laborieusement employée à oublier le souvenir de sa femme, M. X... recouvra toute sa virilité, ayant toutefois conservé une préférence très-marquée pour les personnes du sexe qui, par leurs qualités physiques, lui rappelaient quelques traits de celle qu'il regrettait toujours.

Les habitudes physiques sont tellement liées au régime et à la profession, et les habitudes morales au genre de travail des individus, que ce que j'ai à dire des unes et des autres trouvera naturellement sa place dans les articles suivants.

Régime. — On peut poser en règle générale que tout ce qui tend à établir la prédominance du système nerveux, ou plutôt du système nervoso-sanguin sur les autres parties de l'organisme, et à diminuer l'influence du système lymphatique, doit être considéré comme essentiellement favorable à l'exercice de la génération. Pourtant il est un précepte non moins général et non moins vrai, qui veut que la prédominance du système nerveux soit enfermée dans de certaines bornes, et que les fonctions de ce système, se substituant à toutes les autres, ne transforment pas les malheureux qui le possèdent en tristes sensitives qu'effraye le moindre bruit, qu'affecte l'odeur la plus douce, etc.

Le régime joue un très-grand rôle dans le développement de ces pauvres natures. C'est parmi les femmes, surtout les femmes des capitales et des boudoirs parfumés, que se rencontrent ces êtres chétifs, maigres, dont toute la vitalité se concentre dans la figure qui, munie de quelques muscles sans ampleur, jouit d'une expression saisissable seulement à la lumière des bougies. On les voit dans les salons toucher le piano, pincer de la harpe et chanter la romance; et cependant, malgré soi, on se dit que la vie n'anime ni ces mains, ni cette voix, et que ces accords et ces chants sont froids comme la mort et faibles comme le néant.

Ce n'est point auprès de ces femmes que la copulation est riche de voluptés; ce n'est point avec elles que se perpétue l'espèce. Si les habitants des petites villes et ceux de la campagne, au milieu desquels se rencontrent rarement de semblables organisations, ne venaient pas constamment remplir les places vides dans les capitales, la population de celles-ci aurait bientôt disparu, laissant, après quelques générations, un désert à la place du bruit et du mouvement. L'assimilation des étrangers que Rome opérait dans son sein n'avait évidemment pas d'autre but, et l'on a depuis longtemps remarqué que, sans ce système, la capitale du monde alors connu aurait péri après quelques générations.

Le régime, ou, pour mieux dire, la manière de vivre est donc, au point de vue qui nous occupe, de la plus haute importance; mais comme je ne fais point ici un livre d'hygiène, et que, dans ces considérations générales surtout, il me doit suffire d'indiquer le but à atteindre, je répéterai que pour seconder efficacement l'acte génital le régime doit favoriser, dans de certaines limites, la prédominance du tempérament nervoso-sanguin, et combattre les tendances à la suprématie du tempérament lymphatique.

Profession ; travaux. — Les professions, que l'on ne doit pas s'attendre à voir passer ici en revue, se partagent en deux grandes classes : 1° celles qui n'exigent que les forces purement corporelles, et que l'on appelle métiers ; 2° celles qui réclament l'intervention de l'intelligence, et que l'on nomme plus particulièrement professions. Les premières, toutes choses égales d'ailleurs, favorisent plus que les secondes l'acte vénérien : en activant la circulation, elles augmentent la nutrition, et partant toutes les sécrétions dont l'abondance, cependant, ne saurait troubler l'harmonie de l'économie, à cause de la transpiration plus considérable que déterminent les exercices du corps.

Mais tous les métiers ne sont pas dans ces heureuses conditions : les tailleurs, les bottiers, etc., renfermés presque toujours dans des pièces sans air et sans lumière, accroupis sur des tables ou des escabeaux, et soumis en quelque sorte à un exercice négatif, arrivent, par toutes espèces de privations, à cet état maladif et nerveux dont je parlais tout à l'heure. C'est dans cette classe de la population ouvrière que se rencontre le plus grand nombre d'êtres malingres et difformes; c'est dans elle aussi que germent le plus de vices et que les mauvaises passions se recrutent. La fonction génératrice participe d'ordinaire à cette dégradation physique et morale, et si quelque maladie héréditaire ou cette sorte d'emprisonnement ne retentissent pas d'une manière suffisamment néfaste sur la génération, le contact journalier des deux sexes, des conversations et des exemples fatalement licencieux poussent ces malheureux à des excès et à des vices qui épuisent bientôt leur faculté génératrice.

Il en est à peu près de même pour les ouvriers des manufactures, dont la vie s'étiole au milieu d'une atmosphère empestée et dans des habitudes crapuleuses.

Les professions libérales ou celles qui exigent l'intervention de l'intelligence sont, au contraire, éminemment favorables à l'acte de la génération. Par la politesse dont elles ont l'apanage, et par la culture des arts et des sciences, elles donnent au système nerveux une plus grande délicatesse de sensibilité, et par le travail auquel l'esprit est soumis elles ne laissent point s'affaisser et dormir le consensus qui tient sous sa dépendance le sens génésique.

Cette influence est encore plus marquée pour les professions qui s'adressent plus spécialement à l'âme et qui ont pour objet les beaux-arts. Cependant il est à remarquer que tous les grands artistes et les grands poëtes ont eu fort peu d'enfants, et cette observation n'a pas échappé à Destouches, qui la consigne ainsi dans son *Philosophe marié :*

> On dit qu'on n'a jamais tous les dons à la fois,
> Et que les grands esprits d'ailleurs très-estimables,
> Ont fort peu de talent pour former leurs semblables.

Les conceptions sublimes doivent être précédées de méditations profondes, même chez les hommes de génie, qui subissent alors la loi commune, à savoir que l'énergie de la fonction génitale est en raison inverse de la longueur et des difficultés des travaux intellectuels.

Je dirai en effet ailleurs que les études abstraites et trop longtemps prolongées constituent une cause assez fréquente d'impuissance et par suite de stérilité.

§ II. — Circonstances étrangères à l'individu.

Ces circonstances sont nombreuses et se peuvent déduire de cette infinité d'accidents qui accentuent le cours de la vie; on comprend que je ne puis ici aborder une pareille énumération, et que je me dois contenter de signaler les causes les plus générales qui, n'ayant point un siége dans l'organisme ou n'étant point soumises à la volonté, exercent sur le développement et l'énergie de la fonction génératrice une influence marquée et incontestable. Parmi ces causes, je citerai les climats, les saisons, les années, le jour, la nuit, dans les considérations desquelles seront compris le froid, le chaud, l'humide, la latitude, la position géographique, etc.

Climats. — J'ai dit, en parlant de la menstruation, que les femmes étaient réglées de meilleure heure dans les pays chauds que dans les contrées froides ou tempérées ; cette influence de la chaleur ne peut être mise en doute, lorsqu'on voit les femmes des pays très-froids, comme les Samoyèdes, vivant presque toute l'année dans des souterrains où règne une chaleur étouffante produite par de l'eau jetée sur des pierres rougies, quand on voit ces femmes, dis-je, être aussi précoces que celles des tropiques.

Montesquieu, donnant à ce fait une importance plus que physiologique, le classe parmi les causes de la polygamie : « Les femmes, dit-il, sont nubiles, dans les climats chauds, à huit, neuf et dix ans ; ainsi l'enfance et le mariage y vont presque toujours ensemble ; elles sont vieilles à vingt ans. La raison ne se trouve donc jamais chez elles avec la beauté. Quand la beauté demande l'empire, la raison le fait refuser ; quand la raison pourrait l'obtenir, la beauté n'est plus. Les femmes doivent être dans la dépendance, car la raison ne peut leur procurer dans la vieillesse un empire que la beauté ne leur avait pas donné dans la jeunesse même. Il est donc très-simple qu'un homme, lorsque la religion ne s'y oppose pas, quitte sa femme pour en prendre une autre, et que la polygamie s'introduise (1). »

Chervin, dans sa thèse inaugurale (2), a vivement combattu l'assertion de Montesquieu. Il est incontestable, en effet, par les rapports des voyageurs (3), que les hommes sont également pubères de meilleure heure dans les pays chauds que sous les climats tempérés, et qu'ils subissent profondément, au point de vue des plaisirs vénériens, l'influence excitatrice de la chaleur. Selon Niebuhr (1), Volney (2), et beaucoup d'autres voyageurs (3), rien n'est plus commun dans le Levant que de rencontrer des hommes de trente ans atteints d'impuissance. « C'est la maladie, dit Volney, pour laquelle les Orientaux consultent davantage les Européens, en leur demandant du *Madjoun*, c'est-à-dire des pilules aphrodisiaques (4). »

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(1) Montesquieu, *Esprit des lois*, 1764, in-12, liv. XVI, chap. II.

(2) Chervin, *Recherches médico-philosophiques sur les causes physiques de la polygamie dans les pays chauds*. Paris, 1812.

(3) Voy. Salze, dans *Histoire médicale de l'armée d'Orient*, par Desgenettes. Paris, 1802, in-8, IIe partie, p. 125 ; et *Histoire de l'Afrique française*, par l'abbé Demanet, 1767, in-12, t. II, p. 60.

L'empire des climats chauds sur la précocité du développement et sur l'énergie du génésique est donc incontestable, et l'influence contraire des pays froids est également mise hors de doute par toutes les relations des voyageurs.

Saisons. — D'après ce qui précède, il semblerait naturel de conclure que la saison la plus chaude de l'année doit être la plus favorable à l'exercice de la génération; pourtant il n'en est point ainsi, et l'influence du printemps est beaucoup supérieure à celle de l'été.

Ce fait, en rattachant l'excitation génitale de l'espèce humaine à la loi du phénomène du rut, était connu dès la plus haute antiquité; mais il appartenait à notre époque de l'établir sur une base réellement scientifique, et ce progrès est dû aux travaux statistiques de Villermé, en France (5), et de Quetelet et Smits, en Belgique (6).

En compulsant les registres des naissances, et en marquant, pour chaque mois, le nombre des conceptions, Villermé a cru devoir classer les mois de l'année dans l'ordre suivant, en commençant par les plus féconds :

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(1) Nieburh, *Description de l'Arabie*, 1779, in-4, t. I.

(2) Volney, *Voyage en Syrie*, 1787, in-8.

(3) Olivier, *Voyage dans l'empire ottoman*, an IX, in-8, t. I, p. 150; et Renati, dans *Histoire médicale de l'armée d'Orient*, IIe partie.

(4) Volney, *loc. cit.*, t. II, p. 445.

(5) Villermé, *Annales d'hygiène*, Paris, 1832, t. VIII, 459.

(6) *Annales d'hygiène*. Paris, 1833, t. IX, p. 308

Mai.
Juin.
Avril.
Juillet.
Février.
Mars et décembre.
Janvier.
Août.
Novembre.
Septembre.
Octobre.

Comme on le voit, c'est à l'époque correspondant au rut des animaux, au printemps, alors que toute la nature semble renaître à la vie, que s'opère dans l'espèce humaine le plus grand nombre de conceptions. Les recherches entreprises, en Belgique, dans le même sens, ont donné des résultats parfaitement identiques avec ceux qu'avait obtenus Villermé en France.

Cependant on pourrait se demander si l'action des premières chaleurs, limitée à la fécondation, s'exerce également sur la copulation, en d'autres termes, si cette action n'est pas spéciale à la fécondité, en donnant au sperme et aux ovaires des propriétés reproductives plus énergiques.

Villermé, pour résoudre cette question, s'est adressé aux comptes généraux de la justice criminelle, et il a trouvé que l'époque de l'année à laquelle il se commettait le plus de viols et d'attentats à la pudeur était précisément celle du printemps, pendant laquelle se fait aussi le plus grand nombre de conceptions. Et que l'on n'invoque pas, pour expliquer la plus grande fréquence de ces crimes pendant le printemps, les circonstances des promenades solitaires, des vêtements légers, des rencontres dans les bois et lieux écartés, car les mêmes circonstances se reproduisent, ou à peu près, pendant les mois d'août et de septembre, classés des derniers pour les viols et les conceptions.

Cette influence du printemps n'est pas limitée aux pays tempérés; elle s'étend à toutes les zones, de telle sorte que l'on peut dire que l'homme est assujetti, jusqu'à un certain point, à une sorte de rut périodique dont le retour a lieu, chaque année, au printemps.

Mais de même que le rut cesse d'être périodiquement marqué chez les animaux qui, de l'état sauvage, passent à celui de domesticité, de même l'influence du printemps est moins manifeste chez les habitants des villes, et surtout des capitales, que chez les populations des campagnes. Chez les premiers, en effet, mille causes tiennent sans cesse en éveil le sens génital, sans parler du *climat artificiel* que la civilisation leur apprend à se faire, et qui rend compte du *maximum* de conceptions que présentent en Suède, en Finlande, à Saint-Pétersbourg, les mois de décembre et de janvier, les plus froids sans contredit de toute l'année.

Années. — Pythagore, en proclamant sa doctrine des nombres, donna naissance aux *années climatériques*. Malgré l'empire que cette croyance a exercé sur l'esprit des anciens, les auteurs sont loin d'être d'accord sur les années qui méritent cette désignation. Suivant les uns, chaque septième année présente ce caractère, tandis que pour les autres, il ne faut regarder comme telles que celles qui sont le produit de la multiplication du nombre 7 par les nombres impairs 3, 5, 7 et 9. La grande année climatérique est la 63^e année; les autres années climatériques remarquables sont la 7^e, la 21^e, la 49^e et la 56^e année. Outre les changements dans le tempérament, les maladies, la fortune, etc., que les années climatériques apportaient, les anciens étaient convaincus, et quelques esprits de nos jours partagent cette conviction, que les organes génitaux externes de la femme se resserrent et reviennent à une espèce de forme virginale qui, tout en donnant un nouvel aiguillon aux voluptés de l'homme, augmente les désirs et l'énergie génitale de la femme.

Il est superflu de discuter l'inanité de pareilles assertions ; cependant il est incontestable que les désirs vénériens et l'ardeur copulatrice présentent, chez la femme, un surcroît d'intensité aux approches de l'âge critique; on dirait une lampe qui, avant de s'éteindre, jette une dernière lueur plus vive et plus éclatante que celles qui l'ont précédée.

Il est également démontré que la fécondité de l'espèce humaine est très-considérable pendant les années qui suivent une disette, une famine, une épidémie et les discordes civiles qui jettent le trouble et la confusion dans les rapports sociaux, et qu'au contraire elle diminue considérablement pendant ces époques de calamité publique. Les pratiques religieuses du jeûne, que l'on observe pendant le carême, peuvent être assimilées à la disette, selon Villermé, et produisent les mêmes résultats (1). Cet auteur, à l'occasion des *Recherches statistiques sur la ville de Paris et le département de la Seine*, qu'a fait publier N. de Chabrol, a rédigé des *Considérations sur la fécondité*, où se trouve le passage suivant : « Il résulte de mon travail, qui est fondé sur plus de 13000000 de naissances énumérées mois par mois, que le très-petit nombre de naissances du mois de décembre, qui a pour neuvième antécédent le mois de mars, est l'effet des abstinences du carême. Une circonstance curieuse, c'est que le mois de mars devient progressivement chargé de plus de conceptions à dater de la fin du règne de Louis XV, c'est-à-dire à dater du temps où le relâchement s'est progressivement introduit dans les mœurs, et un changement dans les idées et les pratiques religieuses. Enfin le mois de mars, qui était autrefois le dernier dans l'ordre des conceptions, est maintenant le septième. Les mœurs du peuple, la mesure de ses opinions, sont donc quelquefois écrites dans les résultats de la statistique ; il ne faut que savoir les lire (1). »

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(1) De la distribution par mois, des conceptions et des naissances de l'homme (*Annales d'hygiène publique*. Paris, 1831, t. V, p. 55).

Le jour ; la nuit. — On demandait un jour à Fontenelle s'il n'avait jamais songé à se marier : « Quelquefois, répondit le philosophe, *le matin.* » Est-ce que les désirs vénériens seraient plus énergiques après le repos de la nuit qu'à toute autre heure de la journée ? Cependant un grand poëte, Victor Hugo, a dit :

> Le plaisir, fils des nuits, dont l'œil brillant d'espoir
> S'éteint vers le matin et se rallume au soir.

Qui a raison du philosophe ou du poëte ? Je crains bien que l'un et l'autre aient tort, au point de vue où chacun d'eux s'est placé.

Le soir, avant l'abattement de l'excitation générale produite par la veille, avant le repos de l'imagination et le calme des sens, le stimulus, et partant les désirs, sont plus violents. Mais il faut se garder de conclure de la violence des désirs à une plus grande énergie dans la fécondité et le plaisir. Il est d'observation que les premiers temps des mariages d'amour ou d'inclination sont très-souvent stériles, et que cet état cesse avec l'affaiblissement des désirs, amené par la satisfaction ou l'habitude. Il est également d'observation que les désirs trop longtemps prolongés amènent momentanément l'impuissance chez l'homme, et changent quelquefois les voluptés en douleurs poignantes, dont une hémorrhagie par le canal de l'urèthre signale l'intensité. Donc le plaisir vénérien n'est pas toujours en raison directe des désirs.

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(1) Sans contester d'une manière absolue l'influence du jeûne sur le nombre des conceptions, influence qui, si elle était admise aussi importante que le prétend Villermé, serait en opposition avec ce que j'ai dit, pages 53 et suivantes, touchant les rapports de la nutrition et de la faculté génitale, je dois faire remarquer qu'au temps des pratiques sévères de la religion, le carême était une époque non-seulement d'*abstinence*, mais encore de *continence*, et que les mœurs se sont également relâchées sur le jeûne et sur l'œuvre de la chair.

De plus, le coït, exercé le soir, n'a pas sur l'organisme l'empire absolu qui lui appartient, en raison même de l'agitation générale et de l'exaltation des facultés intellectuelles. Après un bal, où certes les stimulants érotiques ne manquent pas, on savoure mal les plaisirs de l'amour. Après la veille, l'économie réclame le repos et non une nouvelle fatigue ; et puis l'imagination, cette folle du logis, comme la nomme Brantôme, loin de rester où l'appelle le désir vénérien, fait quelquefois l'école buissonnière, qu'on me passe le mot, au moment même où son intervention est le plus nécessaire, et enlève au plaisir un aliment précieux qu'elle donne, soit à un souvenir, soit à une espérance, soit à un calcul.

Je ne parle pas de la fatigue plus grande, de l'épuisement plus profond qui succèdent au coït du soir ; je ne fais pas non plus intervenir l'hygiène, dont les prescriptions sont contraires aux rapprochements conjugaux avant le sommeil ; je ne veux constater ici que l'influence exercée sur l'acte génital par les excitations de la veille, et je suis forcé de reconnaître qu'en ces circonstances, le désir acquiert une énergie qui est loin de se communiquer au plaisir. Victor Hugo serait donc plus dans la vérité s'il remplaçait le mot *plaisir* par celui de *désir*.

Au matin, après le calme et le repos de la nuit, l'organisme et les facultés intellectuelles sont dans une espèce de sérénité béate, si je puis ainsi dire. La sensibilité a toute la virginité de ses impressions, et la folle du logis, encore endormie, ne trouble, par ses divagations, ni les émotions de l'âme, ni la rectitude de la raison. L'être physique et l'être moral sont tout entiers à la première sensation qui les sollicite, et s'y associent d'autant plus complétement que rien encore ne les a distraits ; sans doute l'impression qu'ils en reçoivent ne contracte pas épileptiquement les fibres, mais les distend, comme dirait Cabanis, et constitue tout à la fois une jouissance calme pour le corps et une joie douce pour l'âme. Oui, le coït, exercé le matin, après une nuit de sommeil et de repos, n'est pas précédé de ces violents désirs qu'engendrent les excitations de la veille, mais il est accompagné d'une volupté qui, quoique moins délirante, porte la satisfaction et le bien-être dans toutes les parties de notre être. Ce ne pouvait donc pas être le désir vénérien qui donnait à Fontenelle l'envie de se marier.

Il est sans doute beaucoup d'autres circonstances, telles que la digestion, l'équitation, etc., qui influent sur la génération; mais comme sous leur influence peuvent naître des états pathologiques, j'aurai l'occasion de les retrouver dans divers chapitres de cet ouvrage.

J'ai hâte d'ailleurs de clore une introduction peut-être trop étendue, mais dont la longueur trouve son excuse dans le nécessités même de mon sujet qui réclamait ces considérations générales, afin de me débarrasser d'explications san nombre qui eussent entravé à chaque pas la marche de mon discours.

LIVRE PREMIER

DE L'IMPUISSANCE

L'impuissance (*impotentia*, *anaphrodisie*) est l'impossibilité, pour l'un et l'autre sexe, de remplir toutes les conditions du coït physiologique.

Ces conditions sont :

Pour l'homme : 1° désirs vénériens ; 2° érection de la verge ; 3° éjaculation spermatique ; 4° enfin plaisir au moment de cette évacuation.

Pour la femme : 1° désirs vénériens ; 2° réception de la verge dans le vagin ; 3° plaisir à la suite de cette intromission.

Comme on le voit, je donne au mot impuissance une large acception ; sans revenir ici sur la distinction fondamentale que, plus haut, j'ai faite entre cet état et la stérilité, je ne le réserve pas, à l'exemple de quelques auteurs, à exprimer seulement l'impossibilité de l'érection chez l'homme et de l'intromission chez la femme. Pour moi, le dyspermatisme de Pinel, par exemple, ou l'absence des désirs et des plaisirs vénériens, sont tout aussi bien des cas d'impuissance que la non-érection de la verge ou l'occlusion soit de la vulve soit du vagin.

Cependant quelques auteurs, considérant que la passivité dans le coït n'est pas pour la femme l'état physiologique, en firent une entité morbide qu'ils désignèrent sous le nom de *frigidité*. Mais la confusion vint tout aussitôt détruire les bénéfices de cette heureuse distinction, car pour les uns, la frigidité fut l'absence des désirs vénériens, et pour les autres, ce mot exprima l'absence de la volupté génésiaque.

De plus, quelle que fût l'acception admise, cet état morbide, qui *généralement* n'empêche pas la fécondation, n'était ni impuissance ni stérilité, mais quelque chose à part, que l'impossibilité d'introduire dans une classification méthodique rejetait dans la classe des névroses, comme si l'absence congénitale ou accidentelle du clitoris, par exemple, qui est une cause puissante de frigidité, pouvait entrer dans le cadre des affections nerveuses.

En considérant le plaisir comme une des conditions physiologiques du congrès chez la femme, et en définissant l'impuissance, l'*impossibilité d'accomplir le coït selon toutes les lois de la nature*, la frigidité devenait un cas d'impuissance. C'est ainsi, en effet, que je classe cet état morbide, qui constitue également chez l'homme une cause d'anaphrodisie.

En agrandissant ainsi, pour les deux sexes, les cas d'impuissance, je me suis surtout proposé de faire cesser la confusion regrettable qui règne dans l'histoire des deux maladies qui font le sujet de cet ouvrage, et de ramener leur étude dans la voie d'une méthode réellement scientifique.

SECTION PREMIÈRE

IMPUISSANCE CHEZ L'HOMME

CHAPITRE PREMIER

IMPUISSANCE PAR VICE DE CONFORMATION

§ I. — Anomalies de la verge.

Absence de la verge. — Ce vice de conformation, très-grave au point de vue qui nous occupe, est heureusement peu fréquent. Schenk (1) et Cattier (2) en ont rapporté deux observations, et Fodéré raconte qu'il a traité et guéri d'une incontinence d'urine un jeune soldat plein de courage et de vigueur, qui, avec des testicules bien conformés, n'avait à la place de la verge qu'un bouton, comme un mamelon, par lequel se terminait l'urèthre. « Il m'assura, ajoute Fodéré, avoir toujours été ainsi, et que ce bouton se renflait quelquefois en la présence des jeunes personnes du sexe, et qu'il en sortait par le frottement une humeur blanche (3). »

Un semblable défaut de conformation entraîne fatalement l'impuissance, mais n'est pas absolument une cause de stérilité. Il importe, en effet, que le bouton, le mamelon, en un mot la saillie du corps caverneux remplaçant le pénis, ait une ouverture extérieure communiquant avec les organes spermatiques, bien conformés d'ailleurs, pour que la fécondation s'accomplisse; car il suffit, *dans quelques cas*, que le fluide séminal soit déposé à l'entrée des organes génitaux féminins, et qu'un certain éréthisme, comme nous le verrons ailleurs, existe chez la femme. Aussi Orfila, d'accord ici avec la plupart des auteurs, tout en reconnaissant la possibilité de la fécondation, repousse-t-il l'accusation de viol portée contre un individu atteint de ce vice de conformation (1). Cependant le pénis peut manquer complétement sans qu'il y ait même trace du canal de l'urèthre, comme dans l'observation suivante prise dans la clinique d'un de nos grands chirurgiens.

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(1) Schenk, *Obs. med.*, l. IV, c. IX.

(2) Isaaci Cattieri, *Obs. med. Borello communicat.*, obs. XIX.

(3) Fodéré, *Médecine légale*, t. I, p. 364

« Une sage-femme est venue consulter Nélaton sur le sexe d'un enfant qu'elle apportait ; elle était très-embarrassée pour déclarer son sexe à l'état civil.

« Cet enfant, qui était né depuis deux jours, était parfaitement bien conformé et tetait très-bien. Le scrotum était à la place où il se trouve habituellement, mais il y avait absence complète de pénis ; à sa place, il n'y avait pas de traces, il n'y avait pas de cicatrice. On ne savait pas ce qui était contenu dans le scrotum : était-ce la vessie ou les testicules ?

« Après un examen attentif, Nélaton reconnut que c'étaient les testicules qui se trouvaient dans les bourses. Ils étaient bien à leur place, mais du côté gauche, il y avait un épanchement de sérosité dans la tunique vaginale ; il y avait une hydrocèle. C'était donc un garçon.

« L'enfant se portait bien, ne paraissait nullement souffrir de l'absence d'un organe aussi important que le pénis ; il fallait donc que l'urine s'écoulât par quelque endroit.

« On examina à cet effet l'ombilic pour voir si l'urine ne sortait pas par là ; car c'est presque toujours, comme chez le bœuf, par l'ouraque resté perméable, que l'urine sort quand le pénis est imperforé ou manque complétement ; mais le cordon ombilical ne présentait rien d'anormal, il était ce qu'il est naturellement deux jours après la naissance, flasque, mou, tombant sur le ventre; la ligature était intacte. Il était donc certain qu'il ne donnait pas passage à l'urine.

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(1) Orfila, *Médecine légale*, t. I, p. 177, 178.

« Ce liquide ne pouvait sortir que par la dernière voie qu'on n'avait pas explorée, le rectum. On questionna la sage-femme à l'effet de savoir comment étaient les selles de l'enfant; elle répondit qu'elles étaient toujours liquides et semblaient contenir de l'urine. Il n'y avait plus de doute : c'était donc par le rectum que la vessie se vidait. Il y avait une communication entre ces deux cavités, une espèce de cloaque où se mélangeaient l'urine et le méconium, pour être ensuite expulsés par l'anus (1). »

Dans de pareilles circonstances, en admettant que l'enfant atteigne l'âge adulte, non-seulement le coït, mais encore la fécondation sont impossibles.

Quoi qu'il en soit, la médecine est impuissante et la chirurgie est désarmée devant une semblable infirmité; il n'est pas au pouvoir de l'homme de suppléer la nature dans les fonctions de la vie plastique.

Dimensions extrêmes du pénis. — Ces dimensions extrêmes peuvent être en plus ou en moins.

Le développement excessif de la verge n'est pas généralement admis comme une cause d'impuissance, et si quelques auteurs lui donnent ce caractère, ils ont soin d'ajouter que l'impuissance n'est alors que relative. Sans doute, à ne considérer que l'acte copulateur en lui-même, le volume trop considérable du pénis, soit en épaisseur, soit en longueur, n'empêche pas rigoureusement l'exercice de cet acte; mais si l'on fait attention que le coït doit être, pour les deux sexes, une source de voluptés et non de douleurs, on conviendra que le but proposé est rarement atteint dans de pareilles circonstances. Le développement anormal en grosseur peut produire des contusions, des déchirements dans les organes génitaux de la femme ; et sa longueur excessive peut amener au col de l'utérus des inflammations, et par suite des lésions plus ou moins graves ; je ne parle pas de la douleur qui, dans ce cas, est toujours très-grande, ainsi que le prouve l'exemple, rapporté par P. Zacchias, de cette courtisane de Rome qu'une semblable organisation d'un de ses amants faisait toujours tomber en syncope.

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(1) *Gazette des hôpitaux*, 28 janvier 1854, n° 12.

Toute médication est, en ces circonstances, parfaitement inutile. Le rôle du médecin se borne à quelques conseils pour l'homme et à l'emploi d'un pessaire pour la femme.

Le défaut contraire, c'est-à-dire la petitesse extrême du pénis, a été mis, au point de vue de l'impuissance, sur le même plan que son développement excessif. Cependant voici un fait où le coït, c'est-à-dire le plaisir suivi de l'éjaculation était impossible, et par conséquent l'impuissance absolue. Un étudiant en médecine, de dix-neuf à vingt ans, Brésilien d'origine, se présenta à ma consultation. Sa stature était grêle, sa voix féminine ; le système musculaire à peine développé, sans prédominance aucune du tissu graisseux ; les cheveux châtains, pâles et clair-semés, étaient sans vigueur ; la figure et la poitrine ne présentaient aucune trace de poils ; le pubis n'en était pas entièrement dépourvu, mais ils étaient fins, assez courts, et ne frisaient pas. Avant de me montrer ses organes, le malade me dit qu'il avait non-seulement des désirs vénériens, mais encore des érections fréquentes, et que lorsqu'il se masturbait, l'éjaculation avait lieu avec tous les phénomènes voluptueux qui l'accompagnent d'ordinaire, tandis que, pendant le coït, l'éjaculation, quelque effort qu'il pût faire, ne s'était jamais produite. Le cas était bizarre, et avant de me perdre dans l'hypothèse d'une surexcitation nerveuse qui aurait mis obstacle à la libre circulation du sperme, je demandai à voir les organes de la génération. Quel ne fut pas mon étonnement de rencontrer une verge presque imperceptible, dont il était difficile de découvrir le gland. Le scrotum, les testicules, les canaux déférents, tout l'appareil, en un mot, avait également des proportions lilliputiennes. La verge en érection avait à peu près la grosseur d'un piquant ordinaire de porc-épic et était longue de 2 pouces. Les testicules atteignaient à peine le volume d'une aveline, et étaient difficiles à rencontrer, lorsque le scrotum, en se ratatinant, les refoulait en haut.

A part cet arrêt de développement, tout l'appareil génital était parfaitement conformé. Cependant l'ouverture du prépuce était étroite à ce point qu'il était peu aisé d'y faire passer le gland. Celui-ci n'avait jamais vu le jour, et entre lui et son enveloppe s'était amassée une assez grande quantité de matière sébacée mêlée à du sperme, laquelle avait formé des calculs que je ne retirai pas sans occasionner au malade quelques douleurs.

Évidemment la pression exercée dans le coït par les parois vaginales sur la verge de ce jeune homme était nulle, ou tout au moins insuffisante pour porter le prépuce en arrière dans les mouvements de va-et-vient, et pour déterminer l'excitation nécessaire à l'éjaculation.

Le malade, à qui je développais cette manière de voir qu'il n'avait jamais soupçonnée, voulut bien, en sa qualité d'étudiant en médecine, se soumettre à l'expérience suivante : un cylindre en caoutchouc, de la grosseur d'un pénis ordinaire, et dans l'intérieur duquel était taillé un canal dont le diamètre était exactement celui de la verge en érection, fut maintenu au pubis au moyen d'une lanière, également en caoutchouc, passée sur les lombes comme un bandage de corps. L'élasticité de cette lanière permettait les mouvements de va-et-vient du coït au cylindre, qui les transmettait à la verge, emprisonnée dans son intérieur. Une prostituée s'étant prêtée à l'expérience, cette espèce de copulation s'effectua complétement, c'est-à-dire que l'éjaculation et les phénomènes voluptueux qui l'accompagnent, eurent lieu comme dans les rapprochements ordinaires des sexes.

Ce témoignage, qui ne me laissa plus aucun doute sur la cause de l'impuissance du jeune Brésilien, me suggéra le traitement que je crus devoir mettre en usage. Me rappelant cette loi physiologique d'une grande vérité, à savoir que le développement d'un organe est toujours en rapport avec son exercice, en d'autres termes, que plus un organe est mis en activité et plus il prend d'accroissement, je conseillai au malade de se livrer au coït aussi fréquemment que sa constitution délicate le lui permettait, armé de l'appareil que je lui avais fait construire et dont le canal intérieur devait être tapissé d'un corps gras très-pur, autant pour faciliter les mouvements du cylindre sur la verge que pour donner un aliment à l'absorption. Je ne négligeai point les ressources de l'hygiène, et je prescrivis en même temps une nourriture succulente, un régime tonique et les exercices corporels, tels que l'escrime, la natation à la mer, etc.

Je n'ai revu qu'une seule fois le malade, trois mois après sa première visite; la verge s'était considérablement accrue, et il m'annonça qu'il avait deux fois exercé naturellement le coït, en ayant soin, quelque temps avant la copulation, de faire pratiquer des lotions astringentes aux organes génitaux de la femme. Je ne sais, au moment où j'écris, si le sujet de cette observation est encore à Paris ou s'il est retourné en Amérique; je regrette vivement cette absence, car j'aurais voulu connaître les résultats d'une médication que j'employais pour la première fois et qu'il n'est pas donné de recommencer souvent.

Mondat parle d'un instrument de son invention, dont je laisse au lecteur le soin d'apprécier le mérite, mais que je dois exposer ici, pour ne tenir dans l'ombre aucun moyen de traitement. « J'ai imaginé, dit-il, un instrument qui présente une forme cylindrique de 5 à 8 pouces de longueur, de 10 à 16 lignes de diamètre, ayant une extrémité libre, tandis que l'autre est montée sur un appareil auquel vient s'adapter une pompe aspirante. On introduit le pénis dans le cylindre, avec le soin de ramener en arrière le prépuce; on dirige l'instrument sur un plan incliné vers le haut, l'individu étant debout. Le congesteur est fixé par une main, tandis que l'autre imprime au piston de légers mouvements pour faire le vide; le corps caverneux ne tarde pas à se gonfler; peu à peu le sang le pénètre de toutes parts, tout l'appareil génital subit l'impulsion érectile du pénis, que l'on fait durer de cinq à vingt minutes (1).

Mondat se servait aussi de cet instrument pour déterminer l'érection d'une verge bien conformée dans les cas d'anaphrodisie. Je dirai, lorsque je serai arrivé à ce genre d'impuissance, les résultats que m'a donnés le congesteur de ce praticien.

Bifurcation de la verge. — Tous les ouvrages de médecine légale, tous les dictionnaires de médecine et les traités spéciaux des maladies des organes générateurs parlent de la bifurcation de la verge comme entraînant tantôt l'impuissance absolue et tantôt l'impuissance relative. Ce vice de conformation se rencontre rarement seul; il accompagne presque toujours quelque anomalie de l'appareil urinaire, et surtout l'exstrophie de la vessie. C'est donc au paragraphe que je consacre plus loin à cette infirmité que je renvoie le lecteur, pour la description de la bifurcation de la verge.

Vicieuse direction du pénis. — Cette anomalie congénitale n'est jamais due à la rétraction de la peau ni à la brièveté du filet de la verge; elle réside essentiellement dans les corps caverneux, se présente très-rarement à l'état de simplicité, et accompagne presque toujours un vice de conformation, soit de l'urèthre, soit de la vessie. J.-L. Petit, qui nous a laissé de précieux documents sur les maladies de la verge, rapporte à ce sujet une observation et une nécropsie qui méritent de trouver ici une place. « Un étranger, dit le célèbre chirurgien, me consulta pour savoir si la mauvaise conformation de sa verge, qu'il avait apportée de naissance, pouvait se réparer, ou si, telle qu'elle était, elle le rendrait impropre au mariage qu'il était près de contracter : il avait la verge si considérablement recourbée, que la peau du scrotum lui servait d'enveloppe dans toute sa partie inférieure. Le gland était la seule partie saillante lors de l'érection, ou plutôt lors du gonflement des corps caverneux et du gland; l'ouverture de l'urèthre était placée à l'endroit de la fosse naviculaire, de manière que quand il rendait son urine, elle sortait en nappe et mouillait tout le scrotum. Je le jugeai impropre au mariage, et lui conseillai de ne se point rendre aux raisons de ceux qui auraient envie de le délivrer de son incommodité par quelque opération. Je lui dis que, quoique les parties qu'on aurait à couper en faisant une opération ne fussent pas de conséquence, les suites pouvaient en être dangereuses; mais de plus qu'il n'obtiendrait jamais ce qu'il espérait; que, quand même il n'arriverait aucun accident, quand, après la cicatrice, la verge se trouverait entièrement séparée du scrotum, elle resterait toujours courbée en se gonflant, parce que la cicatrice ne pourrait jamais se prêter à l'allongement de la verge; que, outre cela, il y avait une autre cause de courbure à laquelle l'opération ne pourrait remédier. Il ne suivit point mon conseil : un autre le persuada. Cependant, quoique je fusse d'un avis contraire, le malade désira que j'assistasse à l'opération : elle fut faite avec beaucoup de dextérité; mais la verge, quoique exactement séparée du scrotum, conservait sa courbure et jamais ne put être redressée; elle resta telle après la cicatrice (1). »

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(1) Mondat, *De la stérilité de l'homme et de la femme*, 5ᵉ édition. Paris, 1840, p. 91.

J.-L. Petit pense que dans les cas de courbure originelle de la verge, les cellules du corps spongieux de l'urèthre ou des corps caverneux, selon que la partie concave est tournée en bas, en haut ou sur les côtés, sont plus petites ou moins nombreuses que les autres, et que la moindre quantité de sang qui y afflue détermine de ce côté un volume moins considérable du pénis.

A l'appui de cette manière de voir, il rapporte la nécropsie suivante : « J'ai eu occasion, dit-il, de me convaincre de la réalité de ce fait sur le cadavre d'un enfant que l'on m'avait fait voir le jour même de sa naissance, et auquel je ne voulus faire aucune opération : on me l'avait amené plusieurs fois pendant le cours de sa vie, espérant que je pourrais trouver quelques moyens de le guérir de l'hypospadias, accompagné d'une courbure pareille à celle dont il s'agit. Je le revoyais toujours sans lui rien faire, disant aux père et mère que cette difformité était irréparable. Cet enfant mourut d'une fluxion de poitrine à l'âge de dix à douze ans. Je demandai d'en faire l'ouverture, ne voulant pas échapper cette occasion de satisfaire ma curiosité.

« Je découvris d'abord l'un des corps caverneux; j'y fis ouverture ; j'y passai un tuyau dans lequel je soufflai; la verge se gonfla, se courba en dessous, et, pour la conserver dans cette figure, je fis une ligature au moyen de laquelle je retins l'air; puis je disséquai la verge et je trouvai que tout l'urèthre était fort court ; qu'il était, pour ainsi dire, ligamenteux et incapable de s'étendre, n'ayant aucun tissu cellulaire. Je le séparai des deux corps caverneux fort exactement, mais avec beaucoup de peine; malgré cette séparation, les corps caverneux ne s'allongèrent que fort peu; la verge resta courbe, ce qui me fit juger que la mauvaise conformation de l'urèthre n'était pas la seule cause de la courbure, et que le dessous des corps caverneux y avait quelque part. Pour examiner la chose à loisir, j'emportai les pièces chez moi : ayant séparé les corps caverneux de toute autre partie, j'observai qu'en les tirant par les deux bouts, je ne pouvais les allonger; et, les soufflant de nouveau par la première ouverture que j'avais faite, ils reprenaient la figure courbe, ce que j'attribuai d'abord à une bande ligamenteuse qui régnait à l'endroit d'où j'avais séparé l'urèthre. Je séparai de cette bande tout ce que je pus sans ouvrir les corps caverneux; je coupai même transversalement les fibres que je n'avais pu enlever; malgré tout cela, et malgré l'air que je soufflais avec force, les corps caverneux conservèrent toujours leur courbure. Les ayant soufflés pour la dernière fois, j'y retins l'air par une ligature et les fis sécher. Quelques temps après, je les coupai, l'un longitudinalement, l'autre par tronçons; je reconnus que la figure courbe qu'ils avaient toujours conservée dépendait de ce que leurs cellules étaient presque bouchées dans la partie cave de la courbure, et que, par degrés, elles s'élargissaient jusqu'à la partie convexe, où étaient les plus grandes, soit que ces cellules aient été ainsi dès la première conformation, ou qu'ayant toujours été gênées par l'urèthre et par la bande ligamenteuse, elles fussent restées petites, n'ayant pas eu la facilité de s'étendre comme les autres (1). »

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(1) J.-L. Petit, *Œuvres complètes*, édit. 1837, p. 715

La courbure congénitale de la verge, dépendant des corps caverneux ou du corps spongieux de l'urèthre, ne doit point tenter l'habileté du chirurgien; elle est inguérissable; l'impuissance qu'elle entraîne est par conséquent absolue.

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(1) J.-L. Petit, *loc. cit.*, p. 717, 718.

Le même accident, et ayant le même siége, peut se produire à la suite de certaines affections, comme la blennorrhagie, les contusions de la verge, etc., et peut alors, ainsi que je le dirai plus loin, réclamer efficacement les secours de l'art.

§ II. — Anomalies du prépuce.

Absence du prépuce. — Ce vice de conformation ne produit pas ordinairement l'impuissance, et nous ne le signalons ici, en passant, que parce qu'il enlève au gland une partie de sa sensibilité et rend, par conséquent, le coït beaucoup moins voluptueux.

Cette dernière circonstance n'est pas, on le comprend, sans avoir une certaine influence sur les désirs vénériens.

Depuis longtemps on a cherché à faire artificiellement un prépuce, d'autant mieux que sa disparition a quelquefois lieu accidentellement, à la suite de la circoncision ou de la gangrène de cet organe. Celse indique deux procédés opératoires, dont l'un est applicable à l'absence congénitale du prépuce, et l'autre à sa chute accidentelle. Malheureusement, la rétractilité de la cicatrice neutralise les efforts de l'art, et rend cette petite infirmité incurable, comme on peut le voir dans une observation rapportée par J.-L. Petit (1).

Quelquefois le prépuce ne manque pas entièrement, et il en existe un ou deux lambeaux qui gênent plus ou moins l'acte copulateur.

Quand il n'y a qu'un lambeau, il se trouve ordinairement à la face dorsale de la verge, et peut tantôt dépasser le gland, tantôt s'arrêter à sa couronne sous forme de bourrelet. Dans l'un et l'autre cas, où il est facile de comprendre combien le coït est défectueux, l'excision est indiquée; on produit alors l'absence complète du prépuce, qui, si elle prive le gland d'une sensibilité plus exquise, ne met pas, du moins, obstacle à la copulation.

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(1) J.-L. Petit, *Œuvres complètes*, p. 712.

Quand deux ou plusieurs lambeaux existent, ils peuvent être ou tous indépendants les uns des autres, ou réunis par un seul de leurs bords. — C'est une espèce de bec-de-lièvre du prépuce, simple ou multiple. — La réunion des bords libres peut se faire, soit au moyen de ligatures, soit en avivant ces bords; mais il faut avoir soin de laisser une échancrure à la partie antérieure du prépuce, pour que cet orifice donne librement passage au gland. Cette opération n'est ni sans danger ni sans inconvénient. Aussi faut-il s'abstenir dans le cas où la difformité n'est pas considérable; et, quand l'art est obligé d'intervenir, n'employer, à défaut de l'avivement, que la suture la plus simple, celle à anse ou celle à surjet.

Phimosis. — Le phimosis est constitué par un allongement plus ou moins considérable du prépuce avec rétrécissement plus ou moins marqué de cette enveloppe, et qui peut aller jusqu'à son occlusion complète. Cette dernière circonstance rendrait impossibles non-seulement le coït, mais encore la fécondation, si les individus qui en sont atteints pouvaient conserver ce vice de conformation jusqu'à la puberté; on comprend, en effet, qu'à moins d'une ouverture anormale de l'urèthre, une prompte opération soit nécessaire pour évacuer l'urine amassée entre le gland et le prépuce fermé, et prévenir ainsi les accidents les plus graves.

Je ne m'occuperai pas plus longtemps de cette espèce de phimosis.

Le phimosis ordinaire, celui qui ne présente qu'un rétrécissement plus ou moins considérable du prépuce, avec une longueur trop grande de cette enveloppe, n'est pas rigoureusement parlant, une cause d'impuissance, — il serait plutôt un motif de stérilité ; — mais il contrarie de deux façons le coït, c'est à ce titre que je lui donne ici une place.

Par son rétrécissement, le prépuce prive le gland de cette excitation voluptueuse qu'il acquiert par son contact avec la muqueuse du vagin, et peut s'opposer à son érection complète par l'espèce d'emprisonnement qu'il lui fait subir dans sa partie rétrécie. Je ne parle pas d'une complication assez fréquente du phimosis naturel, la briéveté du frein, à laquelle je reviendrai tout à l'heure, et qui, dans le cas qui nous occupe, augmente les inconvénients que je viens de signaler.

Eu égard à sa longueur, le prépuce gêne le coït, en formant au devant du gland un véritable bourrelet qui peut, soit blesser les organes de la femme, soit rendre douloureuse pour l'homme l'intromission de la verge.

Heureusement, l'art n'est pas désarmé devant une pareille infirmité, et la chirurgie peut toujours la faire disparaître.

Adhérence du prépuce et du gland. — C'est ordinairement une complication du phimosis; quoique cette complication soit le plus souvent accidentelle et résulte de la balanite, elle peut cependant être originelle et accompagner, comme telle, le phimosis congénital.

Sans doute la gêne dans le coït est augmentée par cette complication, ainsi qu'on va le voir dans cette intéressante observation que j'emprunte à J. L. Petit.

« Un jeune homme, dit-il, vint me consulter sur ce que depuis quinze jours qu'il était marié à une jeune veuve, il n'avait pu consommer le mariage ; il était novice et n'avait jamais connu d'autre femme que la sienne ; mais celle-ci ayant plus d'expérience que lui, s'aperçut bientôt qu'il n'était pas conformé comme son premier mari et lui conseilla de me consulter. Il se plaignait de ce que, lorsqu'il voulait introduire la verge, il souffrait et faisait souffrir sa femme ; l'ayant examiné, je connus d'abord que la grosseur de la verge n'était point la cause du cas dont il s'agissait : le prépuce était adhérent au gland, et il me parut l'être dans toute son étendue, excepté environ une ligne à la circonférence du trou de l'urèthre ; je conçus que la verge ne pouvait glisser contre les parois de la vulve et que, faisant effort pour l'introduire, il en résultait deux choses : la première que l'ouverture de l'urèthre était violemment tirée dans tous les points de sa circonférence et lui causait beaucoup de douleur ; la seconde, c'est que la verge, ne pouvant glisser contre les parois de la vulve, celle-ci était poussée dans le vagin et causait aussi beaucoup de douleur à la femme ; l'ayant visité elle-même, j'observais qu'elle avait les nymphes si longues que, dans l'action, elles se renversaient dans le vagin. parce qu'elles étaient poussées avec violence par la verge. Je commençais par faire l'opération qui convenait à la femme ; et peut-être je ne l'aurais pas faite au mari, s'il s'était contenté du moyen que je lui indiquais pour introduire la verge et ne sentir aucune douleur dans l'introduction ; c'était le blanc d'œuf dont la femme devait mouiller la vulve ; l'entrée en devenait glissante, et la verge s'introduisait avec plus de facilité. Mais soit qu'ils se fussent rebutés l'un et l'autre d'un préliminaire qui gênait leur passion, soit que le mari fût plus instruit sur le plaisir que le gland procure, il voulut absolument être opéré (1). »

Cette opération n'est ni sans difficultés ni sans dangers : C'est une dissection longue, pénible et douloureuse qu'il faut faire, et qui doit constamment respecter le gland, pour éviter une hémorrhagie, quelquefois très-difficile à arrêter.

§ III. — Anomalies du frein.

Brièveté du frein. — Cette anomalie trop prononcée, en tirant fortement en bas le méat urinaire, a pu faire croire à des observateurs superficiels, soit à l'existence d'un hypospadias, soit à une courbure de la verge.

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(1) J.-L. Petit, *Œuvres complètes*, p. 691.

Mais si la trop grande brièveté du frein ne fait que simuler ces deux vices de conformation, elle donne naissance aux mêmes accidents, et peut être, par conséquent, regardée comme contraire à une copulation régulière.

Heureusement le mal n'est pas considérable, parce que rien n'est plus facile que d'y remédier : il suffit de couper le frein. Souvent cette petite opération se fait naturellement aux premières approches, surtout si la vulve offre une ouverture étroite. Mais quand cette rupture ne s'est pas opérée pendant le coït, on incise le filet, soit par un coup de ciseaux, soit avec le bistouri, en ayant soin de placer un peu de charpie entre les lèvres de la plaie pour prévenir leur réunion.

§ IV. — Anomalies du gland.

Les vices de conformation du gland se confondent avec ceux de l'urèthre, parce que ces difformités portent toutes sur le méat urinaire, qui est la terminaison ou l'ouverture extérieure de ce canal.

De plus, la description de ces anomalies ne doit point trouver place dans ce chapitre, car, de deux choses l'une, ou l'urèthre n'existe pas, ou il est vicieusement conformé.

S'il n'existe pas, ou s'il est oblitéré dans un point de son étendue, la chirurgie aura dû intervenir avant que l'individu ne soit apte à la génération ; et si ce canal a été rétabli dans sa position normale ou dans une direction artificielle, mais de manière à donner passage à l'urine, la stérilité pourra en être la conséquence, mais l'impuissance n'en sera pas fatalement un effet.

De même, dans la vicieuse conformation de l'urèthre, comme, par exemple, dans les cas d'hypospadias et d'épispadias, les résultats sont analogues à ceux que je viens de dire, et, par conséquent, l'examen des anomalies qui affectent le canal de l'urèthre et le gland, trouve plus naturellement sa place dans le livre consacré à la stérilité de l'homme, que dans celui dont l'impuissance fait le sujet.

Par les mêmes motifs et pour éviter les redites, je renvoie au cadre de la stérilité la description des anomalies du verumontanum, des canaux éjaculateurs, des vésicules séminales, des canaux déférents et des testicules, tout en me réservant le droit d'indiquer celles de ces anomalies qui seront tout à la fois causes d'impuissance et de stérilité.

§ V. — Anomalies de la vessie.

Des différents vices de conformation qui affectent la vessie, un seul rentre dans mon sujet : c'est l'exstrophie ou la hernie congénitale de cet organe.

L'exstrophie de la vessie n'est pas précisément par elle-même une cause d'impuissance ; mais, dans la majorité des cas, elle s'accompagne, soit d'une atrophie, soit d'une vicieuse conformation de la verge, qui entraînent à leur suite l'impossibilité du coït, et qui me forcent, par cela même, à lui donner ici une place.

L'exstrophie de la vessie, que l'on appelle encore l'extroversion, l'inversion, la hernie congénitale de la vessie, est caractérisée par l'absence de la paroi antérieure de cet organe et par la sortie de sa paroi postérieure à travers les fibres écartées de la ligne blanche. Cette tumeur est globuleuse, fongoïde, et présente un volume variable selon l'âge du sujet, selon sa position et selon l'état de repos ou de fatigue. Sa surface, d'un rouge plus ou moins vif, enduite de mucosités, est facilement irritable et continuellement le siége d'un suintement involontaire d'urine.

Cet état a la plus grande influence, non-seulement sur la fonction urinaire, dont je n'ai pas à m'occuper, mais encore sur la fonction copulatrice et fécondante.

Au point de vue de la copulation, elle peut, dans quelques cas rares, ne porter atteinte ni aux désirs vénériens, ni au coït. M. Huguier en a rencontré un exemple à l'hôpital de la Charité de Paris, alors qu'il suppléait M. Gerdy. Passant en revue les diverses lésions de l'appareil génito-urinaire qui accompagnaient l'exstrophie de la vessie dont il raconte l'observation, il arrive à la verge, et dit : « Le pénis de ce sujet présente aussi des vices de conformation. Cet organe a l'aspect d'un tubercule long d'un pouce environ ; il est pourvu d'un gland imperforé ; le canal de l'urèthre manque entièrement. La totalité du pénis rudimentaire est formée par les corps caverneux médiocrement développés. Le malade nous a assuré cependant qu'il pouvait accomplir parfaitement l'acte du coït. Il paraît même que depuis l'âge de quinze ans il se livre aux plaisirs de l'amour. Dans ce moment-là, dit-il, la verge entre en érection et acquiert une longueur de trois pouces environ. Le spasme voluptueux est toujours suivi, au dire du sujet, d'une émission spermatique ; le fluide se répand alors autour de la base de la tumeur ; il n'est pas lancé, il coule en nappe (1). »

Mais, ainsi que je le disais plus haut, les cas où la fonction copulatrice est conservée sont rares. Tantôt la verge, réduite à quelques centimètres chez l'adulte, présente à sa partie supérieure une gouttière, formée par la paroi inférieure de l'urèthre, et au-dessous du gland, un lambeau de peau qui rappelle un prépuce fendu dans sa partie supérieure ; tantôt le pénis offre une bifurcation dont une seule branche supporte le gland ; tantôt enfin les désirs vénériens eux-mêmes sont anéantis, comme pour ne pas éveiller des organes incapables de remplir les fonctions qui leur sont dévolues.

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(1) *Gazette des hôpitaux*, 1840, n° 117, p. 467.

Qu'on me permette, à cet effet, de rapporter deux exemples des anomalies dont la verge peut être frappée, à la suite de l'exstrophie de la vessie.

J'emprunterai le premier à l'observation communiquée en 1789, par Deschamps, à l'Académie de chirurgie, et rapportée par Chopart (1) : « Un homme âgé d'environ trente ans, mort d'une fièvre putride à l'hôpital de la Charité, avait les parties de la génération tellement conformées que l'étendue de la verge, depuis la symphyse du pubis, était d'un pouce, et depuis la racine du scrotum de deux pouces. Ce corps était aplati supérieurement et convexe inférieurement. Cet aplatissement présentait une gouttièret prolongée depuis la pointe du gland jusqu'à un corps rougeâtre, situé entre les os pubis, d'où l'urine s'écoulait par la paroi postérieure de la vessie. Cette gouttière était plus large à son origine, et l'on voyait dans le milieu de cette partie le verumontanum, les orifices des canaux éjaculateurs et ceux des conduits de la glande prostate. Le gland était divisé en deux parties. L'orifice des corps caverneux n'offrait rien de remarquable ; mais ces deux corps, au lieu de se confondre à la verge, étaient seulement appliqués l'un contre l'autre et ne se réunissaient que par leur extrémité antérieure à la base du gland. Cette union était telle que l'air, poussé dans un de ces corps, ne passait point dans l'autre... »

Le second exemple est encore plus remarquable que celui-ci, parce qu'avec les vices de conformation de la verge, il offre l'absence complète des désirs vénériens. Il est rapporté par De Villeneuve, en 1767, et a pour sujet un musicien de Béziers, âgé de quarante-deux ans, nommé Alexandre-Louis Fabre. Après la description de l'exstrophie de la vessie et des anomalies de l'appareil urinaire, l'auteur aborde l'appareil générateur, et s'exprime ainsi : « Immédiatement sous la tumeur était une verge informe, courte, chétive, et comme fendue en dessus et tout de son long. Le gland était fort reconnaissable et sa couronne aussi. Sa couleur et sa substance spongieuse étaient dans leur état naturel ; on y voyait quelques lacunes sébacées ; ce bout de verge semblait avoir le dessus et le dessous en sens inverse ; à la partie supérieure, on voyait comme la trace de l'urèthre ouvert ; ce trajet était exprimé par une espèce de bandelette longitudinale, mais n'était enduit d'aucune humeur, comme j'ai dit que l'était le velouté de la vessie. On juge bien que le gland devait être imperforé, comme il l'était en effet. Des observateurs prétendent avoir vu, dans la commissure du pénis et de la tumeur, une portion supérieure de l'urèthre qui n'était pas fendue comme le reste du trajet. Il n'était pas aisé de vérifier la chose, à cause de l'obscurité et de la douleur que l'écartement des parties causait au sujet, et du rétrécissement du réduit. Mais attendu l'inutilité dont était l'urèthre, ne charriant rien, le fait ne me paraît pas important. On n'avait point sondé ce reste d'urèthre ; on ne voyait qu'un petit bout antérieur des corps caverneux, comme si le reste fût caché dans le bas de l'hypogastre... Ce qu'il y a de très-curieux, mais en même temps de très-étonnant, c'est que (si la bouche d'Alexandre est sincère) il n'avait jamais ressenti : 1° de désirs charnels ni d'érection ; 2° pas même de chatouillement au tact, etc. (1). »

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(1) Chopart, *Traité des maladies des voies urinaires*, Paris, 1830, t. I, p. 330

De pareilles infirmités ne sont susceptibles d'aucun traitement, car les sujets qui en sont atteints, parvinssent-ils à accomplir l'acte de la copulation, seraient pour toujours et fatalement voués à la stérilité, comme je le dirai plus loin, à cause de la difformité de l'urèthre qui accompagne constamment la hernie congénitale du réservoir urinaire.

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(1) De Villeneuve, *Journal de médecine*, Paris, 1767, t. XXVII, p. 26.

§ VI. — Anomalies multiples de l'appareil copulateur.

Les vices de conformation de l'appareil génital tiennent ou à un excès ou, bien plus souvent encore, à un arrêt de développement; quand ces anomalies atteignent plusieurs parties de l'appareil, elles donnent lieu à des monstruosités dont quelques-unes sont de véritables hermaphrodismes.

L'hermaphrodisme, non celui que les anciens adoraient, chez quelques individus, sous le nom d'*androgynes*, ayant la faculté de se reproduire avec des organes mâles et femelles dont ils étaient porteurs, mais l'hermaphrodisme anatomique, si je puis ainsi dire, est constitué principalement par l'existence simultanée des organes essentiels, mâles et femelles, c'est-à-dire glande formatrice de la semence chez l'homme, et glande formatrice de l'ovule chez la femme.

Dans ces occurrences il arrive, presque toujours, que les organes accessoires suivent les destinées des organes essentiels et présentent des anomalies qui font présumer l'hermaphrodisme, quand il existe.

Mais l'hermaphrodisme, c'est-à-dire l'existence simultanée des organes essentiels mâles et femelles est chose très-rare; presque toujours les anomalies portent sur un sexe bien déterminé et simulent si bien les organes de l'autre sexe qu'il est quelquefois difficile d'établir exactement l'identité du malade.

La science et les annales judiciaires sont pleines de faits de ce genre; l'histoire nous offre, en effet, de nombreux individus ayant passé la moitié de leur vie sous des habits d'hommes et l'autre moitié sous des habits de femme, sans compter ceux qui, réputés hommes, ont enfanté, comme le moine dont parle Isidore Geoffroy-Saint-Hilaire (1), ou qui, réputés femmes, ont eu des maîtresses, comme Alexina B..., dont le professeur Tardieu a raconté l'odyssée tragique (2).

Mais pour aborder dans son ensemble la question de l'hermaphrodisme, il faut que nous ayons successivement passé en revue les anomalies de tous les organes génitaux des deux sexes, tant externes qu'internes.

Chaque partie de cette étude sera faite en son lieu et place.

A cette heure je n'ai à m'occuper que des malformations des organes génitaux externes de l'homme qui, par leur ensemble, masquent les caractères masculins de l'appareil copulateur.

Lorsqu'il n'existe qu'une seule des anomalies dont j'ai parlé, c'est-à-dire lorsqu'un seul des organes est mal conformé, il est impossible qu'il y ait confusion sur le sexe véritable : l'arrêt de développement de la verge, ou l'hypospadias, ou la cryptorchidie sont insuffisants, chacun pris séparément, pour induire en erreur sur la personne.

Mais si le pénis n'a guère plus de grosseur que le clitoris, s'il est imperforé, si le canal de l'urèthre s'ouvre au-dessous de la verge, presque au pubis, et si d'autre part, les testicules sont restés dans la cavité abdominale et que, grâce à leur absence du scrotum, les deux portions latérales de celui-ci ne se soient pas réunies et que cette solution de continuité se perde en *infundibulum*, on aura toutes les apparences de l'appareil génital externe du sexe féminin.

L'hypospadias et la petitesse de la verge simuleront le clitoris et le méat urinaire dans leurs rapports chez la femme; la cryptorchidie, la non-réunion des deux parties latérales des bourses et l'ampoule qui ferme en arrière la solution de continuité, donneront l'image d'un orifice vulvaire protégé par de grandes lèvres.

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(1) Geoffroy Saint-Hilaire, *Histoire générale et particulière des anomalies de l'organisation chez l'homme*. Paris, 1832-1836.

(2) Tardieu, *Question médico-légale de l'identité, etc*. Paris, 1874.

Le pénis peut être assez développé pour permettre les rapports sexuels, comme on le voit dans l'histoire d'Alexina B... ; d'autre part, l'infundibulum a quelquefois une profondeur de 6 à 8 centimètres que des tentatives répétées de coït augmentent encore ; de telle sorte que, si ces deux conditions se rencontrent, on peut avoir le spectacle, comme M. Tardieu en cite un exemple, d'un individu remplissant, dans le coït, tour à tour le rôle de l'homme et celui de la femme.

En résumé, l'hypospadias et la cryptorchidie avec séparation des deux parties latérales du scrotum, sont les anomalies qui, réunies sur le même individu, peuvent le mieux induire sur la réalité de son sexe.

Le dommage porte surtout sur la propriété fécondante, car j'ai dit tout à l'heure que, dans beaucoup de cas, le pouvoir copulateur était conservé.

C'est pourquoi j'ai remis à la partie de cet ouvrage qui traite de la stérilité chez l'homme, l'histoire de l'hypospadias et celle de la cryptorchidie.

J'y renvoie le lecteur, ainsi qu'aux vices de conformation de la vulve qui simulent les organes externes de l'homme, et à ceux des organes essentiels dans les deux sexes, études multiples dont la synthèse me permettra d'aborder fructueusement l'histoire de l'hermaphrodisme.

CHAPITRE II

IMPUISSANCE IDIOPATHIQUE

J'appelle impuissance idiopathique l'impossibilité d'exercer le coït, en dehors de toute lésion apparente ou constatable des organes génitaux, en dehors de tout état pathologique d'un appareil quelconque autre que l'appareil génital, en dehors des lois physiologiques qui régissent les âges, les constitutions et les tempéraments, en dehors de l'intervention des facultés morales, en un mot, un état d'inertie de l'activité génésique que n'expliquent ni l'anatomie normale, ni l'anatomie pathologique, ni les rapports de sympathie physiologique ou morbide du sens générateur avec les autres fonctions de l'économie animale. C'est à cet état seulement que convient la dénomination de *névrose* ou de *syncope génitale.*

Cette névrose est excessivement rare.

Telle n'est pas, je le sais, l'opinion des auteurs qui m'ont précédé. Les anciens, privés des lumières de l'anatomie pathologique, ne pouvant, par conséquent, rattacher à certaines lésions locales l'inertie des organes génitaux, et n'ayant que des notions superficielles sur les rapports sympathiques des diverses parties de l'économie entre elles, rapportaient volontiers à des troubles de l'innervation ou de la force vitale, les affections dont la cause et le siége véritables leur échappaient. Ce diagnostic, ou plutôt cette absence de diagnostic, a étendu sur le sujet qui m'occupe d'épaisses ténèbres qui sont encore loin d'être dissipées. Il n'en pouvait être autrement, puisqu'on mettait dans le même cadre, sans rappeler la confusion presque généralement admise de l'impuissance et de la stérilité, l'impuissance symptomatique du diabète et de la spermatorrhée, à côté de l'impuissance consécutive à la masturbation, aux excès de tout genre, de l'impuissance amenée sympathiquement par un état particulier de l'estomac, des facultés morales, etc., etc., et toujours, pour masquer son ignorance, on accusait de ces désordres la force vitale ou le système nerveux.

Du chaos dans lequel était plongée l'étiologie de l'impuissance, ne pouvait sortir, on le comprend, une thérapeutique rationnelle : le hasard, entravé encore par une idée préconçue, fit tous les frais de la médication. Comme l'innervation ou la force vitale étaient accusées d'inertie, on recourut, pour les relever de leur faiblesse, aux échauffants de toute sorte, aux excitants de toute espèce, et l'on classa, sous le titre d'aphrodisiaques, des agents dont la liste est inépuisable ; les trois règnes de la nature furent mis à contribution ; on fouilla les entrailles des animaux, on confia à l'alambic les végétaux des deux mondes, et l'on soumit les minéraux aux réactions les plus aventureuses de l'alchimie. L'esprit recule épouvanté devant tout ce qu'inventa l'imagination pour réveiller l'énergie abattue de l'innervation génitale.

On alla plus loin encore : on appela à son aide la polypharmacie, et, grâce à son complaisant concours, on composa des préparations incroyables que l'on décora de titres pompeux, comme pour ajouter une vertu nouvelle à toutes celles qu'on leur prêtait avec complaisance. Le nombre des formules aphrodisiaques que nous ont laissées nos prédécesseurs est immense et toutes n'offrent aucun intérêt.

Les modernes, grâce aux progrès de la chimie et à l'influence qu'a exercée la doctrine de Broussais, ne tombent plus dans les écarts d'une polypharmacie ridicule ; mais, comme l'étiologie de l'impuissance ne leur est guère mieux connue, et comme, suivant en cette voie les errements des anciens, ils continuent à rapporter à l'affaiblissement de l'innervation la très-grande majorité des cas d'impuissance, ils poursuivent la pensée, à l'exemple de leurs prédécesseurs, d'activer l'énergie vitale et de relever les forces nerveuses du génésique. A cet effet, ils recourent indistinctement aux excitateurs et aux excitants généraux ou locaux, et prescrivent, comme au hasard, tantôt la noix vomique, le phosphore, l'électricité et tantôt la cantharide, la moutarde, les bains de mer et l'hydrothérapie (1).

Cette simplification dans la médication n'amène pas des résultats plus heureux que les préparations polypharmaceutiques des anciens; et il en doit être ainsi, puisque la même confusion règne dans l'étiologie, et par conséquent dans le choix du traitement.

Cependant, quelques rayons de lumière ont pénétré les ténèbres de cette nuit profonde; les travaux de Lallemand (2), de Civiale (3), etc., ont dépouillé du titre de névrose certaines impuissances, dont la cause manifeste est dans la lésion d'une partie de l'appareil génital; mais leurs ouvrages, limités par leur nature même à une seule face de la question dont je dois embrasser l'ensemble, n'ont pu l'arracher tout entière aux nuages où l'ignorance et l'imagination l'avaient entraînée, et lui donner le caractère de positivisme qui distingue aujourd'hui à peu près toutes les parties de la science.

C'est le devoir que je me suis imposé en écrivant ce livre, c'est la route que je me suis tracée en étudiant l'impuissance et la stérilité.

En suivant cette voie tout opposée à celle de mes devanciers, je n'ai pas tardé à me convaincre que la névrose génitale, dégagée de toute lésion locale ou de toute sympathie, en d'autres termes que l'impuissance idiopathique était excessivement rare.

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(1) Voy. *Nouveau dictionnaire de médecine et de chirurgie pratiques*, art. APHRODISIAQUE.

(2) Lallemand, *Des pertes séminales involontaires*, 1836-1842.

(3) Civiale, *Traité pratique des maladies des organes génito-urinaires*, Paris, 1858

Cependant je l'ai bien manifestement observée, comme je le dirai tout à l'heure, et je dois, par conséquent, lui donner ici une place.

Mais l'impuissance idiopathique est loin de se présenter constamment avec les mêmes caractères, et il est très-essentiel, à tous les points de vue, de déterminer d'une manière précise les formes diverses qu'elle peut revêtir.

Rappelons sommairement que la fonction génésiaque n'entre en activité qu'à la suite d'une excitabilité morale qui, elle-même, va réveiller l'excitabilité physique, laquelle détermine d'abord la congestion des corps caverneux, et ensuite la contraction des vésicules séminales et des conduits éjaculateurs, et par suite la sortie de la liqueur séminale, et avec elle le plaisir.

Il y a donc, pour la mise en activité de la fonction copulatrice, la nécessité de l'action de deux éléments : l'un moral, qui correspond à l'instinct chez les animaux, et l'autre complétement organique.

Cette action peut être diminuée ou suspendue dans chacun des deux éléments, ou séparément, ou dans tous les deux à la fois.

Quand l'excitabilité fait défaut à l'élément moral, l'impuissance est surtout caractérisée par l'absence des désirs vénériens.

Quand l'excitabilité morale ne peut éveiller la sensibilité génésiaque, l'impuissance est caractérisée par un trouble de cette sensibilité dont le point de départ se trouve, tantôt dans les centres nerveux, et tantôt dans l'appareil nerveux du sens génital lui-même.

C'est ce qu'on a appelé la névrose ou syncope génitale.

Enfin quand l'absence des désirs vénériens s'accompagne de la non-érection de la verge par n'importe quel moyen (attouchements, rêves lascifs, chaleur du lit, coucher sur le dos, plénitude de la vessie, etc.), l'impuissance est complète et affecte tout à la fois les deux éléments du génésique.

Ces trois formes d'impuissance ont un caractère commun : la diminution ou la suspension de l'excitabilité d'un des deux éléments, au moins, du sens génital, qui me les fait comprendre sous la même dénomination : *impuissance idiopathique par défaut d'excitabilité.*

Mais cette excitabilité, soit morale, soit organique, peut être déterminée et mise en jeu par des moyens artificiels qui l'éloignent de son but naturel, le coït, et par conséquent amènent l'impuissance.

J'appelle ce second genre d'anaphrodisie : *impuissance idiopathique par perversion d'excitabilité.*

Comme pour le défaut d'excitabilité, la perversion peut s'adresser ou à l'élément moral, ou à l'élément organique, ou simultanément aux deux éléments du sens génésiaque.

Quand la perversion affecte l'élément moral, elle amène cette impuissance ou cette répulsion pour le coït physiologique qu'éprouvent le masturbateur, le sodomiste, le pédéraste et la tribade.

Quand la perversion affecte l'élément organique, l'impuissance est ordinairement constituée par l'absence d'éjaculation et par suite de plaisir, comme dans le priapisme et l'aspermatisme.

Enfin quand la perversion atteint les deux éléments du génésique, la sensibilité n'a plus de boussole et subit, par le fait même de cette espèce de folie, l'empire des excitants les plus étranges : c'est le satyriasis.

Toutes les formes de l'impuissance idiopathique sont comprises dans les divisions que je viens d'énumérer; il me faut donc maintenant, pour légitimer la réalité de ces distinctions, faire l'histoire des diverses variétés d'impuissance, et dire ensuite les ressources que nous possédons contre chacune d'elles.

C'est le sujet de ce chapitre.

§ I. — Impuissance idiopathique par défaut d'excitabilité.

Cette espèce d'impuissance peut être congénitale ou accidentelle.

Quand elle est congénitale, c'est-à-dire lorsque le malade n'a eu ni désirs, ni érection, elle est presque toujours liée à un état déplorable de la constitution et à l'atrophie, ou tout au moins à un arrêt de développement de l'appareil génital, de telle sorte qu'il est très-difficile de décider si, dans ce cas, l'impuissance est cause ou effet. Cependant Planque cite, d'après les éphémérides d'Allemagne, un fait d'impuissance congénitale au milieu des conditions les plus favorables au coït : « On n'aurait pas si bien réussi, dit-il, avec ce stupide impuissant dont parle *Hartmann* (1). Il était fort et robuste et avait les testicules fort gros, la verge courte, petite et flasque, mais il ne connaissait ni érection, ni semence, et n'avait jamais eu de sentiments d'amour (2). »

Cette observation laconique ne peut, on le comprend, servir de base à une opinion ; d'autre part, il ne s'est jamais présenté à mon examen un impuissant de naissance, sans vices de conformation ou sans maladies, et offrant tous les caractères d'une parfaite vitalité ; aussi suis-je porté à croire que cette impuissance idiopathique congénitale, *si elle existe*, est excessivement rare, et qu'il faut se mettre en garde contre les exemples qu'en pourraient citer des observateurs superficiels.

Cependant, une espèce d'inertie native de l'appareil génital se rencontre assez souvent au milieu des conditions les plus favorables de l'économie; il est vrai que cette faiblesse n'implique pas l'impuissance absolue; mais elle est si près de l'anaphrodisie que la moindre circonstance peut l'anéantir et l'enrayer dans ses manifestations. Les malades connaissent parfaitement leur état et disent, en parlant de leur appareil génital : *c'est ma partie faible.*

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(1) *Ephemerides germanicæ*, dec. 3, an. 4, ob. 85, p. 181.

(2) *Bibliothèque choisie de médecine*, t. IV, p. 239, art. IMPUISSANCE.

Le plus ordinairement les désirs vénériens prennent part à l'inertie des organes génitaux et sont comme eux languissants et paresseux. Pourtant ils ne disparaissent jamais complétement, alors même que la faiblesse virile est arrivée jusqu'à l'impuissance.

Malgré leur peu d'énergie, les organes génitaux sont bien conformés et ne portent aucune trace d'atrophie : les testicules ont leur volume normal, la verge est suffisamment grosse; seulement tout l'appareil est flasque et pendant; les testicules tirent en bas un scrotum pâle, allongé et sans rides, que le froid ne recoquille pas et que les attouchements amoureux émeuvent à peine; la verge, molle et froide, est comme exsangue; la circulation semble suspendue aussi bien dans le gland que dans les corps caverneux; enfin l'artère dorsale ne se décèle que par des battements filiformes et presque imperceptibles.

Pour ces hommes dont l'appareil génital est la partie faible, ainsi qu'ils disent, la copulation n'est ordinairement possible qu'à la suite d'une forte excitation génésiaque qui tantôt réveille l'innervation endormie, tantôt active la circulation paresseuse, quand elle ne doit pas s'adresser, à la fois, à ces deux fonctions également languissantes.

Le pronostic de cette espèce d'impuissance n'est pas ordinairement grave : sans doute l'art est incapable de remédier à certains vices de constitution, mais une thérapeutique rationnelle peut, comme je le dirai tout à l'heure, fortifier l'appareil génital en agissant, selon les circonstances, soit sur l'innervation, soit sur la circulation, et quelquefois sur les deux fonctions en même temps.

Quand le défaut d'excitabilité frappe le sens génital dans le cours de son fonctionnement, l'impuissance qui en résulte revêt un caractère différent, comme je l'ai dit, selon que les désirs vénériens sont conservés ou sont éteints.

La physionomie de chacune de ces formes d'anaphrodisie porte un cachet bien distinct et bien marqué. Dans le premier cas, la douleur du malade est extrême et le désespoir peut le pousser au suicide; ce n'est point seulement un sentiment de honte qui l'agite, mais un véritable supplice qui lui rend la vie à charge et impossible; pour se guérir, le malheureux est capable des médications les plus excentriques, comme de s'envelopper, toutes les nuits, pendant plus d'un mois, dans des feuilles de choux, ainsi que le fit un homme de trente ans, d'une intelligence et d'une instruction au-dessus de la moyenne.

Quand les désirs vénériens, au contraire, se sont éteints avec l'érection, le malade n'éprouve qu'un sentiment de honte dont il est facilement distrait par les affaires ou les préoccupations de la vie; il n'a recours à la médecine que lorsqu'il est marié ou lorsque, par des considérations de fortune, de position, de naissance, etc., il se décide à se marier. En dehors de ces deux circonstances, il est indifférent à son infirmité qu'il peut d'ailleurs facilement cacher à la malignité publique.

Cependant il importe de savoir, au point de vue du pronostic et de la thérapeutique, si l'érection peut être produite soit par la masturbation, soit par des rêves lascifs, soit par la chaleur du lit, soit par le coucher sur le dos, soit par la plénitude de la vessie; ces érections anormales, qui bien souvent font sortir le malade de son apathie, établissent des degrés dans l'impuissance avec perte des désirs, et modifient le pronostic dans un sens plus favorable.

Dans tous les cas le défaut d'excitabilité morale, c'est-à-dire l'absence des désirs vénériens, est toujours une chose fâcheuse dans l'impuissance idiopathique ; elle rend le pronostic plus grave que lorsque les désirs sont conservés, et exige l'intervention d'une médication morale que le médecin ne peut indiquer qu'avec une réserve facile à comprendre.

Toutes ces différences légitiment la distinction capitale de l'impuissance idiopathique en deux formes, basées sur la persistance ou la disparition des désirs vénériens, et me forcent à faire séparément leur histoire.

1° *Impuissance idiopathique avec persistance des désirs.* — Elle peut se produire ou primitivement ou secondairement.

Primitivement, l'impuissance survient sans cause connue, sans motif plausible, au milieu de la santé la plus parfaite. Rarement la virilité s'éteint tout d'un coup ; au contraire, elle s'affaiblit progressivement, et le malade suit avec terreur les progrès de cette atonie jusqu'au jour où l'organe ne répond plus à l'incitation des désirs.

Secondairement, l'impuissance se montre à la suite d'un accident, physique ou moral, qui aurait pu entraîner et qui même a entraîné l'inertie de la verge, mais qui, disparu depuis plus ou moins longtemps, ne peut plus exercer son influence sur l'énergie virile : une indisgestion, un brusque changement de température, une vive émotion, etc., peuvent en agissant violemmment sur l'innervation, laisser après eux une impuissance que le temps seul dissipe presque toujours, et qui n'exige pas une thérapeutique active.

Mais il n'en est pas de même de l'impuissance idiopathique primitive dont les causes sont obscures, et qu'il est impossible de rattacher soit à un trouble moral, soit à une lésion organique.

C'est la véritable syncope génitale des auteurs.

Ce trouble de l'innervation qui fait que l'excitabilité physique ne répond plus à l'excitabilité morale, est tantôt direct et tantôt indirect.

Il est direct, quand son point de départ est dans le système nerveux lui-même.

Il est indirect, quand le point de départ est dans le système circulatoire dont l'insuffisance prive l'innervation des éléments nécessaires à son activité.

Dans tous les cas, qu'elle soit directe ou indirecte, il y a une névrose génitale dont le caractère principal et presque toujours unique est un abaissement et même une suspension de l'activité fonctionnelle de l'appareil.

Quand la névrose est directe, c'est-à-dire quand l'innervation seule est atteinte, la verge est flasque et pendante, il es vrai, mais ne rentre pas, pour ainsi dire, dans l'abdomen ; les corps caverneux sont résistants et élastiques ; on sent les battements de l'artère, et l'on voit de larges veines sillonner le pénis, tandis que le gland, rosé et tendu, offre une coloration pleine de vitalité.

Quand la circulation, au contraire, est le point de départ de la névrose, le sang ne parvenant plus dans les corps caverneux, la verge se réduit en des proportions microscopiques, disparaît presque entre la peau des bourses et celle du pubis, ne laisse saillir ni artère ni veines, et présente un gland ridé, pâle et décoloré.

Comme le diagnostic différentiel de ces deux états est de la plus haute importance pour l'institution du traitement, ainsi qu'on le verra plus loin, on ne saurait avoir trop de moyens de l'établir.

Dans les cas où les caractères ci-dessus ne seraient pas assez saillants pour former la conviction, on n'a qu'à recourir à l'électricité et à faire contracter les muscles ischio et bulbo-caverneux.

Si la syncope est purement nerveuse, il y aura une demi-érection, ou tout au moins le gland deviendra plus rouge, et les corps caverneux plus turgescents.

Si, au contraire, la syncope tient au ralentissement de la circulation de l'appareil génital, la contraction des muscles bulbo et ischio-caverneux n'arrête pas assez de sang pour colorer le gland, gonfler les corps caverneux, et produire un commencement d'érection; la verge sort tout au plus des profondeurs où elle se tient enfouie, et laisse apercevoir un gland toujours pâle et toujours ridé.

L'état général aide à peine à établir un diagnostic dont les principaux éléments, je le répète, se trouvent dans l'état des organes génitaux eux-mêmes.

Cependant, quoique la syncope génitale puisse se produire avec tous les tempéraments, avec toutes les constitutions et avec tous les états de santé, il est bon de tenir compte de toutes ces conditions générales, d'abord parce que le médecin n'en doit jamais faire abstraction, et parce qu'en suite, il en peut tirer des indications utiles.

En effet une exagération, par exemple, de la sensibilité générale peut amener un trouble dans l'innervation génitale, et par suite l'impuissance, comme je l'ai plusieurs fois observé.

Dans ce cas, l'état de la verge indique seulement que le point de départ de l'impuissance est dans un trouble de l'innervation; mais on ne découvre la nature de ce trouble que dans les conditions de l'état général.

Un diagnostic exact est encore ici de la plus haute utilité, car, selon l'occurrence, il faudra recourir ou aux sédatifs ou aux excitateurs, dont l'usage intempestif aurait pour le moins l'inconvénient de perpétuer la maladie.

Quoi qu'il en soit, le traitement de la syncope génitale s'adresse plus spécialement à l'innervation ou à la circulation de l'appareil génésiaque, selon que le point de départ de la syncope a son siége dans le système nerveux ou dans le système circulatoire.

Mais, comme presque toujours les deux systèmes se trouvent atteints à la fois, l'un directement et l'autre indirectement, il faut agir sur tous les deux, en insistant seulement, je le répète, sur celui qui paraît tenir les accidents sous sa dépendance.

Pour bien faire comprendre l'origine obscure, la marche lente et insidieuse de l'impuissance idiopathique avec conservation des désirs vénériens, je transcrirai l'histoire pathologique dont M. le docteur H. Max, médecin des hospices civils de Bruxelles, avait chargé un de ses malades qu'il envoyait prendre mon avis. Cette consultation, savamment et logiquement déduite, montre également une thérapeutique sage et excellemment ordonnée.

C'est une haute leçon de clinique que je suis heureux de mettre sous les yeux du lecteur.

« Il y a douze ans, m'écrivait M. le docteur H. Max, M. K... a souffert d'une sciatique pour laquelle il a subi le traitement ordinaire : ventouses, vésicatoires, calmants, etc.

M. K... a été atteint d'une affection du foie pour laquelle il a suivi, pendant deux années successives, une cure à Vichy; son état de santé, très-précaire avant ce traitement, s'est raffermi au point que, de son propre aveu, son état général n'a jamais été meilleur qu'aujourd'hui (il est marié et père de deux enfants).

« Lorsque M. K... s'est présenté chez moi, à la fin de juillet 1874, il était atteint d'une impuissance complète dont le début remontait à 2 ans 1/2; l'état général était excellent, toutes les fonctions régulières, à l'exception de celles des organes génito-urinaires. L'examen physique des parties indiquait le manque de vitalité : la verge était atrophiée, le scrotum, pendant, les tissus décolorés, les veines peu gonflées; l'émission des urines était difficile, le jet faiblement lancé était en tire-bouchon, les érections manquaient absolument, même celle du matin déterminée par la plénitude de la vessie. Le méat urinaire laissait suinter un peu de liqueur prostatique, la prostate elle-même offrait et offre encore un certain degré d'hypertrophie; jamais de pollution; aucun symptôme du côté de la moelle épinière.

« Mon diagnostic fut : impuissance essentielle, amenée par la marche progressive d'une sorte d'atrophie des organes génito-urinaires, caractérisée par la diminution de l'afflux sanguin, et la semi-paralysie des fibres musculaires.

« Le traitement établi fut le suivant : du 22 juillet 1874 au 24 septembre, lotions froides plusieurs fois par jour, et administration successive et à dose progressive : 1° de la teinture alcoolique de noix vomique; 2° de l'extrait alcoolique de noix vomique associé à l'éthiops martial : 5 grammes d'éthiops, 10 grammes d'extrait pour 100 pilules, à prendre trois par jour.

« Le 24 septembre je joignis à ces premiers moyens l'électricité; un mois après je portai la dose d'extrait de noix vomique à 15 grammes pour 100 pilules. Nous atteignîmes ainsi le milieu du mois de novembre.

« L'état du malade s'était considérablement amélioré; la verge était devenue plus forte, le scrotum se relevait, l'émission des urines était plus facile, le jet lancé plus loin et plus fort, enfin une érection franche précédait l'émission des urines du matin.

« En présence de l'impatience du malade je voulus essayer l'effet des cantharides, tout en continuant la noix vomique et l'électricité. Je donnai 5 grammes de teinture de cantharides dans 200 grammes de sirop; une cuillerée à café le soir en se couchant, plus tard une cuillerée à dessert. Le traitement suivi pendant un mois ne produisit aucun résultat appréciable; nous marquions le pas.

« Le 19 décembre, je passai à la strychnine pure : 15 centigrammes pour 36 pilules, à prendre 3 par jour; le 27 décembre je portai la dose à 30 centigrammes, et le 4 janvier 1875 à 35 centigrammes, toujours pour 36 pilules, à prendre trois par jour.

« Nous arrivâmes ainsi au 10 janvier; l'érection précédant l'émission des urines du matin était bien caractérisée, nous obtenions même assez fréquemment une seconde érection presque complète, une heure ou deux après l'émission des urines.

« Je conseillai alors l'hydrothérapie, douches sur la colonne et douches périnéales, concurremment avec la strychnine et l'électricité. Le résulat en fut excellent, et sous l'influence de ces divers moyens, nous arrivâmes à avoir, plusieurs fois, des érections nocturnes complètes.

« Le 7 février, je remplaçai la strichnine par la teinture éthérée de phosphore, 4 grammes dans 120 grammes de véhicule; mais le résultat de cette prescription fut désastreux; les érections que nous avions obtenues cessèrent complétement, et les fonctions digestives s'altérèrent. Au bout de 8 jours, je renonçai au phosphore, pour revenir à la strychnine.

« Nous nous retrouvons aujourd'hui au point où nous étions avant l'administration du phosphore; nous avons des érections, l'état général est redevenu excellent, mais les fonctions génératrices n'obéissent pas encore à la volonté du malade.

« En résumé, partant d'une impuissance absolue, fin juillet 1874, le traitement par la noix vomique, la strychnine, l'électricité et l'hydrothérapie combinées, nous a amenés, au bout de sept mois, à une amélioration considérable, mais pas encore à une guérison complète. »

La durée de cette impuissance remontant à plus de trois ans, et sa persistance, malgré le traitement le plus rationnel et le plus énergique, me firent penser à l'hypertrophie de quelque ganglion comprimant les filets nerveux, ainsi qu'il arrive assez souvent pour le grand sympathique, et je conseillai l'iodure de potassium, tout en continuant les excitateurs et les excitants auxquels je fis ajouter l'application de sinapismes sur la verge.

Huit mois après, c'est-à-dire en novembre 1875, M. le docteur H. Max me renvoya le malade avec la nouvelle lettre suivante.

« Monsieur et très-honoré confrère, j'ai l'honneur de renvoyer à votre observation l'un de mes malades pour lequel j'ai déjà eu recours à vos lumières, et qui, bien qu'ayant vu sa situation s'améliorer, n'est cependant pas complétement guéri.

« J'ai scrupuleusement suivi vos indications jusqu'au moment où le malade est parti pour la campagne ; j'ai alors, mû par l'espoir de détourner le plus possible son imagination de son mal, conseillé la suppression de tout traitement, à l'exception toutefois du phosphore.

« J'avais essayé une fois déjà du phosphore sous forme de teinture éthérée dans une potion, mais il y avait eu très rapidement intolérance de l'estomac. La seconde fois j'ai eu recours aux granules d'acide phosphorique ; je n'ai eu aucun inconvénient de l'administration du phosphore sous cette forme, et le malade en prend encore aujourd'hui. Depuis une quinzaine de jours il s'est remis à l'électricité.

« Comme résultat nous sommes arrivés à obtenir une érection régulière chaque matin avant l'émission des urines, fréquemment une seconde érection quelque temps après avoir uriné. Une forte demi-érection le soir, très rarement érection dans la journée.

« Je serais très satisfait de cette situation, si elle s'accentuait davantage ; mais depuis assez longtemps déjà nous ne gagnons rien ; nous ne perdons rien, il est vrai, mais nous restons stationnaires.

« L'état général du malade est excellent, il n'a jamais été meilleur. »

On voit par cette observation combien la névrose génitale résiste parfois aux moyens les plus rationnels et les plus énergiques; comme dans le traitement des autres névroses, il faut une persistance à toute épreuve; ce n'est qu'à ce prix qu'on finit par triompher d'un mal qui, pendant un longtemps, fait le désespoir tout à la fois du malade et du médecin.

2° *Impuissance idiopathique avec perte des désirs.* — Comme je l'ai dit plus haut, cette forme de l'impuissance idiopathique n'est pour le malade ni un motif de désespoir ni un sujet de honte, à moins qu'il ne soit marié ou qu'il veuille le devenir; mais elle est pour la thérapeutique, la forme la plus ardue et la plus rebelle, parce qu'elle exige tout à la fois un traitement moral et une médication physique.

Dans maints endroits de cet ouvrage j'aurai à noter l'absence des désirs vénériens, la rapportant à des causes multiples et diverses : tantôt elle sera sous la dépendance d'un état morbide comme le diabète ; tantôt elle sera le signe d'une fatigue extrême ou d'un repos trop prolongé des organes génitaux; tantôt elle se montrera solidaire de quelque préoccupation intellectuelle et tantôt nous la rencontrerons au milieu de l'exaltation de quelque passion affective.

Mais ici l'étiologie est plus obscure : bien que les désirs vénériens puissent disparaître subitement, tout d'un coup, cette absence arrive ordinairement d'une manière progressive, comme une fonction qui faiblit, s'allanguit et disparaît tout à fait.

Les constitutions faibles et les tempéraments lymphatiques, ainsi que l'inertie native de l'appareil génital dont j'ai parlé plus haut, sont des prédispositions à la perte de l'excitation vénérienne. Cependant on la rencontre avec les constitutions les meilleures et les tempéraments les plus robustes, comme chez les personnes qui font vœu de chasteté, et qui le tiennent.

Une continence absolue et suffisamment prolongée est, en effet, une condition favorable à l'apaisement des désirs de la chair; au début, ces désirs s'irritent de ne point être satisfaits, mais plus tard la nature se lasse de la lutte et cède la victoire à la volonté persistante de l'homme.

C'est l'histoire d'une foule de bons prêtres et de religieux qui parviennent ainsi à ne pas transgresser leur vœu de chasteté.

Dans le monde, on trouve, plus souvent qu'on ne pense, des hommes qui, par un motif ou par un autre, s'imposent une continence dont rien ne les fait départir.

Ce sont, pour la plupart, des victimes vouées d'avance à la perte des désirs vénériens; mais l'impuissance qui en résulte est alors consécutive à un excès de continence dont l'histoire a sa place marquée plus loin.

Ici l'anaphrodisie ne peut être rattachée ni à des excès, ni à un état maladif, ni à une aberration morale, ni à une lésion organique. C'est la névrose génitale complète à laquelle on ne peut attribuer que les causes prédisposantes que j'ai indiquées plus haut.

Dans cet état déplorable du sens génital il y a des nuances, selon que l'organe copulateur entre ou n'entre pas en érection sous l'influence d'excitants étrangers au génésique, tels que la chaleur du lit, le coucher sur le dos, la plénitude de la vessie, etc., ou bien si des éjaculations se produisent, ou non, pendant le sommeil, sous l'empire de rêves lascifs et avec sensation voluptueuse.

Quand des érections anormales se produisent, quand des pollutions nocturnes ont lieu avec érection et sensation de plaisir qui éveillent le malade, la névrose génitale n'a pas la gravité qu'elle présente, quand il y a absence absolue d'érection et d'éjaculation.

Dans ce dernier cas, la paralysie est complète et la sécrétion testiculaire est presque nulle.

Quelquefois cette sécrétion n'est qu'amoindrie et alors, de loin en loin, les vésicules séminales se vident, et le sperme sort en bavant et sans déterminer de sensations voluptueuses.

Ces états sont graves au point de vue seulement de la fonction génératrice, car, je le répète, ils peuvent exister avec une bonne santé générale, avec l'intégrité de toutes les autres fonctions.

Aussi, comme les malades ne sont pas sollicités par les désirs, qu'ils sont, sous le rapport vénérien, dans une complète apathie morale qui ne trouble ni les autres facultés, ni les autres fonctions, ces malades, je le dis à nouveau, ne se préoccupent de leur position que lorsqu'ils sont mariés ou veulent le devenir.

En dehors de ces deux circonstances et de quelques rares accidents de la vie, les hommes atteints d'anaphrodisie morale et physique ne souffrent ni ne se plaignent de leur infirmité : ils n'y pensent pas ; ils n'ont même pas le sentiment de honte qui poursuit le malheureux dont les désirs sont conservés, et ne fuient même la société ni des hommes ni des femmes. Dans leurs rapports avec ces dernières, ils apportent la plus complète indifférence et n'obéissent qu'aux conventions du monde.

Un long temps peut se passer ainsi pendant lequel l'impuissance peut devenir irrémédiable.

Mais avant de porter un pronostic aussi fâcheux et de déclarer la paralysie au-dessus des ressources de l'art, il faut tenter les ressources que la thérapeutique met à notre disposition et s'armer surtout d'opiniâtreté et de constance.

Au début, le traitement doit viser au sens intime et s'adresser à sa sensibilité par des moyens moraux et physiques tout à la fois.

Sous le premier rapport, il faut observer une gradation lente dans le choix des excitants, afin de prévenir le dégoût qu'inspirent toujours aux esprits froids des conversations trop libres, des lectures trop licencieuses, des peintures trop nues et des spectacles trop décolletés. La conduite à tenir varie avec chaque malade; elle doit s'inspirer de ses mœurs, de ses croyances, de ses habitudes, de ses affections, de ses travaux, de la tournure de son esprit, etc., etc. C'est en cette occurrence que le médecin a besoin de tout son tact, de toute sa prudence et aussi de toute sa fermeté. Il doit ne jamais se hâter, marcher lentement dans une voie pleine de périls, et toujours s'assurer du terrain avant d'y aventurer ses pas; comme pour une éducation à faire, il doit employer la méthode progressive, et ne rien précipiter; — le succès est à ce prix.

Quant aux moyens physiques, ils doivent, au début, seconder l'action du traitement moral, plutôt que réveiller l'organe de la copulation. Par un régime essentiellement analeptique, par l'électricité appliquée aux testicules, par des fumigations aromatiques sur le scrotum, on se proposera d'activer la sécrétion testiculaire dont l'énergie est un excitant des désirs vénériens.

Quand ceux-ci, après un long temps, je le répète, de persévérance et de soins moraux et physiques, commenceront à renaître, on abordera, avec plus de chances de succès, la *médication aphrodisiaque*.

Nous allons voir, dans un article qui leur est exclusivement consacré, quels sont les éléments de cette médication; mais je tiens d'ores et déjà à protester contre l'existence d'agents spécifiques de la syncope génitale. S'il n'y a pas de remèdes aphrodisiaques, proprement dits, contrairement à ce qu'affirment les charlatans et les jongleurs, il est loisible à la médecine d'instituer des médications capables de réveiller l'innervation ou d'activer la circulation de l'appareil génital. Tous les agents de la matière médicale peuvent y concourir, depuis les excitants les plus forts jusqu'aux émollients les plus bénins, depuis les excitateurs les plus puissants jusqu'aux sédatifs les plus énergiques.

Mais cette importante question de thérapeutique va m'occuper, et l'on trouvera dans le paragraphe qui suit les éléments et les indications de toutes les médications aphrodisiaques.

THÉRAPEUTIQUE DE L'IMPUISSANCE IDIOPATHIQUE.

Les ressources dont la médecine dispose pour combattre la syncope génitale n'ont rien de spécifique; la matière médicale ne possède aucun *aphrodisiaque*, et cette dénomination ne convient ni à aucun des médicaments, ni à aucun des agents physiques, ni à aucun des moyens mécaniques dont je parlerai tout à l'heure.

Mais, parce qu'elle manque d'un spécifique, la thérapeutique de l'appareil génital n'est pas plus désarmée que celle des autres sens; elle trouve dans la matière médicale des éléments d'action qu'elle mêle et qu'elle combine et dont l'ensemble constitue une *médication*.

Quand la médication a pour but de réveiller et d'augmenter la vitalité du génésique, elle peut, sans forcer le sens des mots, être appelée aphrodisiaque.

La médication aphrodisiaque est, comme toutes les médications, variable selon les combinaisons multiples que le praticien lui impose. Cependant nous essayerons, à la fin de ce chapitre, d'en établir les bases et d'en formuler les indications les plus importantes.

Mais avant ce travail d'ensemble, il est nécessaire de faire connaître les éléments dont se compose la médication aphrodisiaque, et qui se recrutent tout à la fois parmi les médicaments, parmi les agents physiques et parmi les agents mécaniques.

Ces nombreuses ressources s'adressent les unes à la circulation et les autres à l'innervation de l'appareil génital.

J'appelle les premières des *excitants*.

Je nomme les secondes des *excitateurs*.

Les unes et les autres exercent leur action ou d'une manière directe, quand ils sont appliqués immédiatement sur les organes copulateurs, ou d'une manière indirecte, quand ils s'adressent à l'économie toute entière, dont les modifications se font sentir sur l'appareil génital, comme sur toutes les autres parties de l'organisme.

De l'énumération que je vais faire dans l'ordre que je viens d'indiquer, de tous les éléments de la médication aphrodisiaque, je détacherai l'hydrothérapie, les eaux minérales et les bains de mer, auxquels je consacrerai un paragraphe séparé à cause de l'importance particulière que ces moyens d'action ont pris de nos jours.

Entre temps, et dans le cours de ce travail, je présenterai quelques considérations sur le traitement moral dont l'influence est prépondérante dans la thérapeutique de l'anaphrodisie avec perte des désirs vénériens.

Quand de cette manière, nous connaîtrons toutes les ressources dont le praticien peut disposer (1), j'essayerai, comme je l'ai dit plus haut, de montrer les indications principales de la médication aphrodisiaque.

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(1) Pour la liste des aphrodisiaques qu'admettaient les anciens, on peut consulter : Venette, *Tableau de l'amour conjugal*, t. I, p. 272, édition d'Amsterdam, 1732 ; de Lignac, *De l'homme et de la femme*, t. I, p. 147, édit. de 1774 ; et *Bulletin de pharmacie*, t. V, p. 193.

I. — EXCITANTS.

A. — *Médicaments excitants.*

Nous les classerons d'après le règne de la nature auquel ils appartiennent.

RÈGNE INORGANIQUE. — Nous trouvons dans ce règne et par rang d'importance : le phosphore, l'acide phosphorique et le chlorure de sodium.

Phosphore.—Le phosphore est, à coup sûr, l'agent qui mérite le mieux la qualification d'aphrodisiaque. Alphonse Leroy et Bouttotz ont expérimenté sur eux-mêmes le phosphore et ont parfaitement constaté son action excitante sur l'appareil copulateur; les observations de Hartcop, cité par Faylar et Péreira de Londres, confirment les expériences de A. Leroy; enfin, dans ces derniers temps, M. le docteur Delpech, médecin de l'hôpital Necker, a préconisé le phosphore, comme nous le verrons plus loin (1), contre l'impuissance des ouvriers qui travaillent le caoutchouc vulcanisé. Cependant l'influence de cet agent sur l'appareil génésiaque n'est pas assez spécifique pour lui valoir une dénomination spéciale; c'est un excitant énergique dont l'action se fait surtout sentir sur les systèmes nerveux, sanguin, sécréteur et musculaire; il exalte les facultés intellectuelles et produit une diurèse abondante. Son administration exige les plus grandes précautions; ou le donne à l'intérieur dissous dans l'éther ou les huiles; je me trouve bien de la forme capsulaire imaginée par M. Dujardin-Baumetz; chaque capsule contient 1 milligramme d'huile phosphorée;

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(1) Voyez le chapitre consacré à l'impuissance résultant de l'intoxication par le sulfure de carbone.

on en donne de 3 à 4 par jour. A l'extérieur, on emploie le phosphore en frictions, sous forme de liniment ou de pommade.

Acide phosphorique. — Alibert cite, d'après Pelletier, un fait remarquable : un homme, dit-il, énervé par les plaisirs de Vénus, était tombé dans un état de marasme et de consomption dorsale; dans un espace de temps très-court, il recouvra ses forces par le seul secours d'une limonade préparée avec l'acide phosphorique et le miel. — Comme le phosphore, l'acide phosphorique exige certains ménagements. On le prescrit à la dose de 20 à 30 gouttes dans un verre d'eau sucrée, à répéter plusieurs fois par jour.

Chlorure de sodium. — On a depuis longtemps constaté que les individus qui se nourrissent de salaisons sont très-prolifiques, et on a même donné le nom de *salaces* à ceux qui sont très-enclins aux plaisirs de l'amour; nous trouverons plus loin le sel marin parmi les condiments qui doivent entrer dans l'hygiène des impuissants, et dans la thérapeutique des bains de mer.

RÈGNE VÉGÉTAL. — C'est le règne végétal qui nous fournit la liste la plus longue des excitants ; aussi, pour mettre quelque ordre dans leur énumération, rapprocher les espèces qui ont des caractères identiques, et aussi pour abréger cette nomenclature, je suivrai l'ordre alphabétique des familles admises par les botanistes.

Anonacées. — Cette famille ne nous présente qu'une seule espèce, le *cananga* (*Uvaria odorata*) qui croît aux Moluques. Ses fleurs, à odeur suave, entrent, avec l'huile de coco, de curcuma etc., dans une pommade que l'on imite en Europe sous le nom d'*huile de macassar.*

Aroidées ou aracées. — Je ne citerai de cette famille que l'*açore-vrai*, le *roseau aromatique*, dont la racine fraîche est employée, à Constantinople, pour faire une confiture très-répandue dans les harems, afin d'exciter à l'amour.

Champignons. — La *fausse oronge*, le *bolet odorant*, la *morelle* et la *truffe* jouissent, à divers degrés, d'une réputation excitante que l'expérience n'a pas toujours confirmée. Dans tous les cas, cette propriété ne se fait sentir que chez les personnes qui usent avec abondance de ces champignons.

Conifères. — Tous les végétaux de cette famille sont remarquables par leur saveur aromatique et résineuse; la *térébenthine* et le *genevrier*, dont l'action sur l'appareil urinaire est incontestable, ont été employés à relever l'énergie virile, à cause du voisinage et des rapports qui unissent l'appareil urinaire et l'appareil génital. C'est un mode d'action semblable à celui des cantharides dont je parlerai plus loin. Les baies de genevrier, employées à l'extérieur, comme tonique, sous forme de fumigations ou de frictions, peuvent rendre des services. La *sabine*, qui appartient à la même famille, a été également préconisée contre l'atonie des organes génitaux, à cause de l'action excitante qu'elle exerce sur l'appareil génital de la femme. Tous les emménagogues, rue, safran, cataire, etc. sont dans le même cas que la sabine.

Crucifères. — Toutes les crucifères sont stimulantes à des degrés divers; elles doivent cette propriété à la présence d'une huile volatile qui leur communique une odeur aromatique; cependant je ne citerai guère que la *roquette* dont Columelle a dit :

> *Excitat ad venerem tardos eruca maritos*,

et quelques espèces comestibles, telles que les *raves*, les *navets*, la *moutarde*, etc. Cette dernière est précieuse comme topique, et j'aurai plus loin l'occasion de parler des services qu'elle peut rendre dans le sujet qui nous occupe.

Drimyrrhizées ou amomées. — Famille peu étudiée en botanique et qui cependant renferme de nombreuses espèces dont les propriétés excitantes sont incontestables. Je citerai en première ligne le *galanga* dont les propriétés aphrodisiaques ne rencontraient anciennement aucun contradicteur. Théophraste qui, par ses nombreux écrits, mérita de lui donner son nom, *herbe de Théophraste*, assure que cette plante a une *grandissime vertu d'échauffer à paillardise*, car, non-seulement, dit-il, si on en mange, mais si on en fait une application sur les parties gênitales, on accomplit l'acte vénérien douze fois..... autant de fois que l'on veut; quant aux femmes, si elles en mangent, encore plus chaudes deviennent que les hommes.

En faisant la part de l'exagération à laquelle Théophraste est entraîné par son enthousiasme, on ne peut nier que le galanga ne possède des vertus excitantes; malheureusement, cette plante, que l'on cultive dans l'Inde, se trouve difficilement dans notre commerce, et l'on fait souvent passer pour la racine du galanga, la racine du roseau aromatique dont j'ai parlé plus haut, et qui a quelque ressemblance avec celle de l'amomée. A côté du galanga je ne citerai que quelques espèces réputées excitantes : les unes pour leurs graines, comme le *petit cardamome*, et les autres pour leurs racines, comme les *curcumas*, l'*arow-root*, les *zédoaires* et le *gingembre*.

Iridacées. — Cette famille n'offre à notre attention que le *safran* qui rentre dans la classe des emménagogues dont j'ai parlé à l'occasion de la sabine (*famille des conifères*).

Labiées. — Quoique presque toutes très-aromatiques, les labiées n'ont que de faibles propriétés excitantes; il en est même, parmi celles qui contiennent du camphre, qui sont accusées d'avoir des propriétés contraires; la *menthe*, d'après Hippocrate, serait dans ce cas : *Si quis eam*, dit-il, *sæpe comedat*, *ejus genitale semen ita colliquescit ut effluat*, *et arrigere prohibet et corpus imbecillum redit;* il est vrai que

Dioscoride et Galien ne sont point de cet avis, et accordent à la menthe des propriétés aphrodisiaques.

Quoi qu'il en soit, l'infusion théiforme, ou quatre ou cinq gouttes de son huile essentielle dans un verre d'eau, constituent une boisson doucement excitante, fort utile dans des cas d'irritabilité nerveuse. On peut mettre sur la même ligne les *lavandes : lavande mâle* ou *aspic* et *lavande stæchas*, dont l'huile essentielle produit de bons effets, en frictions sur les organes génitaux ; la *sauge* et enfin la *marjolaine*, avec les fleurs de laquelle les juifs couvraient la couche des nouveaux époux.

Je ne puis oublier ici les bains et les litières que l'on compose avec les labiées les plus aromatiques, telles que la *sauge*, la *menthe*, le *thym*, le *romarin*, la *lavande*, le *serpolet*, et qui sont d'une si grande utilité dans tous les états de l'organisme, caractérisés par la faiblesse générale et le relâchement des solides.

Lauracées. — Cette famille est presque entièrement composée de plantes aromatiques dont les écorces sont singulièrement excitantes, malgré le camphre que beaucoup d'entre elles renferment. Il faut citer, en première ligne, la *cannelle* trop connue pour nous arrêter longtemps ; le *Culilawan* qui fournit une huile volatile que l'on emploie en frictions sur les organes génitaux, et avec laquelle les Chinois composent un onguent, le *bobori*, qui jouit chez eux d'une immense réputation ; l'*avocatier* dont le fruit a été particulièrement recommandé par Scaliger pour l'usage qui nous occupe ; le *muscadier* qui fournit deux excitants énergiques : 1° la semence appelée *noix muscade* ou simplement *muscade ;* 2° le *macis*, sorte de cupule qui entoure l'amande à la base ; enfin, cette liste se clot par deux excitants plus faibles : le *sassafras* et le *laurier* naturalisé dans nos contrées.

Légumineuses. — L'*arachide* et la *caroube* ont des propriétés excitantes trop douteuses pour que je ne les aie pas passées sous silence, et avec elles la famille des légumineuses, si le souvenir de Pythagore ne me faisait un devoir de rappeler les *fèves* dont il défendait l'usage à ses disciples auxquels il prêchait la chasteté.

Lilliacées. — Les bulbes de quelques lilliacées, l'*ail*, l'*oignon* et ses congénères, ont été consacrés comme aphrodisiaques par Martial, qui ne faisait que traduire les idées de son temps, quand il dit de l'ail et de l'oignon :

Qui prestare virum cypriæ certamine nescit,
Manducet bulbos et bene fortis erit.

Quant au *poireau*, l'École de Salerne le recommande dans son 51ᵉ aphorisme commençant ainsi :

Porrum fecundas reddit persæpe puellas (1).

Magnoliers. — Cette famille ne contient que la *badiane* ou *anis étoilé*, dont l'huile essentielle, la *badianite*, la rapproche de l'anis dont je parlerai tout à l'heure.

Meliacées. — Cette famille ne contient guère, à notre point de vue, que la *cannelle blanche* que l'on confond assez souvent avec l'écorce de Winter, et qui jouit, mais à un moindre degré, des propriétés excitantes de la cannelle de Ceylan.

Myrtacées. — La plante qui a donné son nom à cette famille, le *myrthe*, était autrefois consacrée à Vénus, et très-vantée pour ses propriétés aphrodisiaques. Garidel qui écrivait son histoire des plantes de la Provence, en 1723, indique une liqueur huileuse, préparée avec les baies de myrthe pilées et un peu d'eau-de-vie, comme propre à raffermir les organes génitaux relâchés. On trouve encore dans cette famille, comme très-excitants, les fruits de quelques espèces, tels que le *clou de girofle*, qui n'est autre chose que la fleur du giroflier, cueillie et séchée avant son épanouissement; *le piment* ou *poivre de la Jamaïque*, fourni par le fruit du *Myrtus pimenta*, desséché avant sa maturité.

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(1) Édition Charles Meaux Saint-Marc avec le texte latin en regard, précédée d'une *Introduction* par Ch. Daremberg. Paris, 1861.

Ombellifères. — Il faut mettre en tête de cette famille une plante que l'on trouve rarement en Europe, mais qui jouit, en Chine, d'une réputation immense; c'est le *geng-seng* ou *ginseng* que l'on confond presque toujours avec le *ninzin*, *ninsi* ou *nindsin* qui nous arrive du Japon, et qui mérite moins que le ginseng, la qualification d'*esprit de la terre*, *recette d'immortalité*. Je citerai, comme plus à notre portée, le *chervi* que Tibère, pour satisfaire ses débauches, exigeait des Allemands sous forme de tribut, et que les Suédoises, au dire de Venette, font prendre à leurs maris pour les exciter à l'amour; *le panicaut* dont Tournefort vante la racine préparée avec du sucre et du miel, et que l'on mâche, comme l'*angélique* qui appartient à la même famille et qui jouit des mêmes vertus, mais à un moindre degré; enfin le *daucus de Crète* dont le fruit n'est pas sans quelque valeur.

Les Ombellifères contiennent aussi des plantes alimentaires excitantes, telles que *carottes*, *panais*, *fenouil* et *céleri*, que nous retrouverons dans l'hygiène des impuissants.

Orchidées. — La plante qui a imposé son nom à cette famille, l'*orchis*, a des tubercules qui affectent la forme du scrotum, ce qui lui a valu la réputation d'aphrodisiaque dont elle a joui dans l'antiquité, et qu'elle conserve encore en Perse où l'on fabrique, avec l'espèce *satyrion*, un électuaire capable, au dire de certains voyageurs, de faire faire des prodiges en amour. On prépare avec les orchidées que l'on cultive en Europe, une espèce de fécule appelée *salep*, qui n'a que des propriétés analeptiques. Mais à côté des orchis dont les vertus stimulantes sont fort douteuses, nous trouvons la *vanille*, dont les propriétés doucement excitantes sont connues de tout le monde, et diverses espèces de *poivre*, tels que le *bétel*, le *pinang* qui, mâchés par les peuples de l'Orient, éveillent et soutiennent chez eux l'appétit vénérien.

Papavéracées. — L'*opium* jouit dans l'Inde d'une grande réputation d'aphrodisiaque. Les Chinois préparent avec lui une espèce d'électuaire appelé *affïon*, et une liqueur connue sous le nom de *maslach;* les femmes, dit-on, redoutent les approches des hommes qui font usage de ces préparations. Sans aller aussi loin que les Chinois, il faut reconnaître que l'opium, associé aux aromates et surtout à l'ambre gris, donné à petites doses et pendant un temps limité, possède une action excitante dont on peut tirer parti.

Rutacées. — Nous appliquerons à la *rue* les observations que j'ai faites à l'occasion du safran et de la sabine; quant à la *fraxinelle* ou *dictame blanc*, c'est un aromate qui peut être employé comme le thym et le romarin.

Solanées. — La *mandragore* doit sa réputation aphrodisiaque à la ressemblance que sa racine affecte avec la cuisse; elle entrait anciennement, avec l'*alkékenge* et peut-être aussi avec quelque *datura*, dans la composition des philtres amoureux dont les fables ridicules ne doivent pas nous arrêter plus longtemps.

Synanthérées. — Presque tous les végétaux de cette famille nombreuse ont des propriétés stimulantes et toniques qu'ils doivent à l'huile volatile et au principe amer qu'ils contiennent; cependant chez les uns, l'action stimulante prédomine, tandis que l'action tonique est plus marquée chez les autres; tous appartiennent à des tribus distinctes; en effet les *carduacées* se distinguent par une amertume plus prononcée qui les fait employer comme toniques, alors que les *corymbifères* sont plus actives comme stimulantes, à cause de l'huile essentielle qu'elles contiennent. Je me contenterai donc de citer parmi ce dernier groupe : l'*absinthe*, l'*armoise* et la *matricaire*, dont les propriétés emménagogues nous rappellent les considérations que j'ai fait valoir à l'occasion de la sabine; puis viennent la *camomille*, la *balsamite* et la *mille-feuille*, dont les infusions théiformes peuvent seconder l'action d'agents plus actifs.

Je ne puis quitter cette famille sans rappeler qu'elle renferme des végétaux comestibles, tels que l'*artichaut*, les *hélianthes*, et entre autres le *topinambour*, dont les préparations culinaires un peu aromatisées sont assez excitantes.

Valérianacées. — MM. Trousseau et Pidoux indiquent, d'après Agricola, la *valériane* comme étant capable de *doubler les forces aux combats amoureux*, et ils ajoutent : « Il ne serait pas impossible, à la rigueur, que son odeur seule ait pu légèrement exciter le système nerveux. » Il faudrait alors attribuer la même propriété à l'assa-fœtida dont l'odeur est encore plus forte.

Verbénacées. — Nous terminons cette longue énumération par la plante que les anciens avaient consacrée à Venus, à cause de ses propriétés aphrodisiaques, *herba veneris*, et dont nous avons fait *verveine.* L'expérience n'a pas justifié l'enthousiasme des anciens; mais comme léger rubéfiant, la verveine est utile en topique, et je l'ai souvent employée à la place de la moutarde, quand je ne voulais produire qu'une faible irritation.

RÈGNE ANIMAL. — Les anciens avaient prêté à certaines productions animales, telles que les *bézoards* et l'*hippomane*, des vertus merveilleuses que l'expérience n'a pas confirmées. Nous relèguerons donc leurs récits au nombre des fables qui ne doivent pas nous occuper.

Quadrupèdes. — Mais si les bézoards et l'hippomane doivent rester dans l'oubli où ils sont tombés, il est d'autres productions, fournies par quelques quadrupèdes, dont la valeur thérapeutique incontestable leur donne une place légitime dans le cadre qui m'occupe.

Je veux parler du *musc*, de la *civette* et du *castoréum*.

Ce sont des excitants généreux diffusibles dont on peut souvent mettre à profit l'action antispasmodique.

En dehors de ces productions animales, la classe des quadrupèdes ne nous offre plus que la chair des animaux qui font partie de notre alimentation. Sans nous arrêter à ce que les anciens ont écrit sur l'action aphrodisiaque de la chair du *lion* et du *cerf*, il est constant que certaines viandes sont plus excitantes que d'autres, telles que celle du *porc* et de presque tous les animaux qui vivent à l'état sauvage, le *sanglier*, le *chevreuil*, le *lièvre*, etc., dont l'étude est plutôt du domaine de l'hygiène que de celui de la thérapeutique.

Oiseaux. — Cette classe que réclame de préférence l'art culinaire, ne nous offre guère aussi que des mets plus ou moins excitants, tels que la bécasse et d'autres espèces que l'on accommode avec des aromates ou avec des truffes.

Insectes. — Dans le sujet qui nous occupe, cette classe nous offre deux espèces intéressantes, la *cantharide* et le *carabe doré*, la première surtout invoquée par la débauche et à laquelle on donne toujours la principale place parmi les médicaments dits aphrodisiaques.

Et cependant nul agent n'est moins digne de cette appellation que la cantharide, dont l'action sur le système génital n'est que secondaire et consécutive à l'action inflammatoire qu'elle exerce sur le réservoir urinaire. La cystite cantharidienne a été l'objet de nombreux travaux que je n'ai pas à étudier ici, mais qui ne laissent aucun doute sur le mode d'action aphrodisiaque de la cantharide.

Soit que l'inflammation de la vessie, déterminée par la cantharide, se communique à l'appareil génital, soit que cette inflammation ne fasse qu'activer le système vasculaire des organes voisins, on ne peut et doit attendre une influence du méloé sur les organes génitaux, qu'après avoir déterminé une inflammation plus ou moins énergique sur le réservoir urinaire.

A ce point de vue et sans parler des accidents que l'ingestion des cantharides peut produire sur le tube digestif, comme tous les poisons acres, l'administration de cet agent comporte la plus grande réserve et de minutieuses précautions; on l'a vu, en effet, produire l'inflammation de la verge avec pissement de sang et même sphacèle du pénis.

Depuis longtemps j'ai renoncé à la poudre, dans la crainte de son action vésicante sur le tube digestif; je n'emploie que la teinture alcoolique dans une potion ou mixture, le vin dans de l'eau sucrée, ou l'extrait alcoolique en pilules.

Comme type de préparation aphrodisiaque cantharidienne, je citerai le *baume de Giléad de Salomon* qui a joui d'une immense réputation, et dont la composition est la suivante :

Cardamome.................	30	grammes.
Cannelle...................	30	—
Baume de la Mecque........	2	—
Teinture de cantharides......	1	—
Alcool à 21 degrés..........	100	—
Sucre.......................	250	—

On prenait de cette préparation une cuillerée à café dans du vin généreux.

Les anciens nous ont transmis sous le nom de *bupreste sacré* une préparation aphrodisiaque dont le principal rôle était joué par le carabe doré. Depuis les travaux de Latreille sous le rapport de l'histoire naturelle, et les expériences de Bretonneau au point de vue de la matière médicale, cette opinion ne saurait être soutenue; il faut admettre que l'agent actif du bupreste, ou le carabe des anciens, n'était qu'une espèce de méloé.

Employées à l'extérieur, en frictions, sous forme de liniment, les cantharides font partie des *irritants* fluxionnaires, comme la moutarde et quelques renonculacées, les espèces, par exemple, qui composent les genres *Clematis*, *Anemone* et *Ranunculus*.

Plus loin, à l'article ventouse, j'indiquerai le rôle des irritants, et je montrerai les services que l'on peut demander aux cantharides et à la moutarde, appliquées directement sur l'appareil copulateur.

Reptiles. — Galien, Pline, Dioscoride et après eux Venette, Lemire, etc., s'ils affirment tous les propriétés aphrodisiaques du *scinque*, ne peuvent se mettre d'accord sur la partie de l'animal qu'il faut employer ; l'un veut que ce soient les reins ; l'autre, au contraire, ne recommande que la chair qui entoure ces organes ; celui-ci vante les pattes, et celui-là, en désespoir de cause, n'affecte aucune préférence et recommande toutes les parties de l'animal.

Qui croire, et à qui entendre? je pense qu'il ne faut croire à personne et encore moins aux vertus aphrodisiaques de ce saurien.

La *tortue de mer* n'offre pas plus de garantie que le scinque, surtout quand je songe qu'une seule partie de l'animal est recommandée et que cette partie est le pénis séché au soleil.

Quittons toutes ces fables et arrivons à des excitants un peu moins problématiques.

Poissons. — De tous temps, on a constaté que les nations ou les individus ichthyophages étaient très-prolifiques ; on en a naturellement conclu que le poisson jouissait, à un haut degré, de propriétés aphrodisiaques.

L'observation est vraie dans le sens que nous donnons à ce dernier mot.

Beaucoup ont attribué cette action excitante aux salaisons et aux assaisonnements que l'on fait subir aux poissons ; mais, depuis les travaux de Fourcroy et de Vauquelin, cette explication ne peut garder son caractère absolu, et il faut admettre que le poisson est bien réellement excitant par lui-même, grâce au phosphore qu'il renferme; aussi cette action est-elle plus marquée dans les espèces cartilagineuses, telles que les raies et les squales.

Presque tous les mollusques ont passé et passent encore pour exciter à l'amour. Je ne ferai que rappeler le *poulpe*, la *sèche*, la *moule* et enfin les *huîtres* que les Vénitiens, confiants en cette parole de Juvénal :

Grandia quæ modiis jam noctibus ostrea mordet.

prirent l'habitude de manger à leur souper; ce que nous faisons encore aujourd'hui, sans attacher à cette coutume l'importance des riverains de l'Adriatique.

Je ne quitterai pas la classe des poissons sans rappeler que l'*ambre gris* dont la nature et l'origine ont donné lieu à une foule d'hypothèses, est aujourd'hui regardé comme une excrétion morbide du cachalot, analogue aux calculs biliaires humains; l'ambre gris figurait dans une foule de recettes aphrodisiaques et jouissait anciennement d'une grande réputation sur ce point. Sans tomber dans les illusions et l'enthousiasme des anciens, il importe de conserver l'ambre gris parmi les excitants, au même titre que le musc et le castoréum.

B. — *Excitants impondérables.*

L'agent par excellence de l'excitation générale ou locale est sans contredit le calorique. La médecine et la chirurgie ont occasion de l'employer à des degrés divers de température, et c'est à ce titre que je vais l'examiner ici.

Calorique. — L'action du calorique sur l'organisme peut aller depuis la plus simple excitation jusqu'à l'altération et la destruction des parties soumises à son contact. La chirurgie met quelquefois à profit cette action destructive; mais pour le sujet qui nous occupe, on n'y a jamais recours. Aussi il doit bien rester entendu que, dans tout le cours de cet ouvrage, à moins d'une déclaration précise, je ne parlerai jamais que d'une élévation de température compatible avec l'intégrité des tissus.

Comme je l'ai dit plus haut, le calorique exerce une action générale ou locale, selon le mode de son application.

Les formes sous lesquelles on l'administre comme excitant général sont : les boissons chaudes, l'insolation générale, l'exposition devant un foyer de chaleur, l'étuve sèche et humide, tous les procédés de bains de vapeur, le bain liquide, les bains de boue ou de sable, le contact du corps de l'homme ou d'autres animaux, etc.

Les moyens dont on se sert pour produire l'action locale sont : l'insolation peu concentrée par des verres lenticulaires faibles, les douches d'air, de vapeur ou d'eau chaude, les bains liquides partiels, le cautère objectif instantané, l'application de briques, bouteilles, sachets, linges chauffés, etc., etc.

De ces derniers moyens la thérapeutique de l'impuissance ne retient guère que les douches de toutes sortes, et les applications locales des objets que je viens d'énumérer.

Je ne m'arrêterai pas ici à l'action des douches d'eau chaude ou de vapeur, tant générales que locales, parce que ces modes d'application du calorique trouvent rarement une indication dans le sujet qui m'occupe. Je ne veux signaler, en cette place, que la douche sèche, c'est-à-dire d'air chaud comme étant d'un grand secours dans les cas de laxité et de mollesse des tissus. A cet effet, et à défaut d'appareil plus compliqué, on peut se servir d'une seringue qui fait l'office d'une pompe aspirante; dans la majorité des cas, il suffit de faire chauffer le corps de l'instrument avant d'y introduire l'air, par le refoulement en haut du piston, et d'administrer la douche quelques minutes après; dans les cas où une élévation plus grande de température est nécessaire, on fait d'abord pénétrer l'air dans l'intérieur de la seringue, et, après avoir hermétiquement fermé l'ouverture de la canule, pour prévenir la sortie de l'air qui se dilate sous l'influence de la chaleur, on chauffe la seringue, ou au bain-marie, ou à un foyer plus ardent.

Les douches d'air chaud se dirigent, soit sur les organes génitaux, sur le périnée ou les lombes, comme excitant local, soit sur la colonne vertébrale et à l'occiput, comme excitant général.

On peut remplacer l'air par la fumée résultant de la calcination d'un agent médicamenteux. Dans quelques cas, de simples fumigations suffisent ; mais alors on doit toujours se proposer d'agir localement sur les organes génitaux. Le malade est assis sur une chaise percée, les reins entourés d'une couverture qui, embrassant le siége dans ses plis, tombe jusqu'à terre. Un réchaud est placé sous la chaise, et l'on projette, de temps en temps, sur la braise qu'il contient, le médicament en poudre dont on veut faire usage.

Dans les cas, au contraire, où l'action mécanique de la douche doit être ajoutée à l'action physique de la chaleur et à l'action médicamenteuse de l'agent, on recueille cette fumée dans une vessie ou dans un flacon à tube, et on la fait passer dans la seringue préalablement chauffée.

Dans quelques cas, cependant, où le resserrement du système vasculaire général paraît ne pas être sans influence sur l'atonie des organes génitaux, en diminuant l'activité circulatoire de toute l'économie, on pourra recourir à l'étuve sèche ou humide, ou bien encore au bain russe. Mais on aura soin de limiter à un quart d'heure ou à une demi-heure au plus la durée de cette excitation, et en général de toute excitation produite par le calorique, car cette excitation prolongée est suivie d'un faiblesse et d'un épuisement général dont les organes génitaux prennent leur part.

Froid. — Le froid, que je considère ici comme un simple abaissement de température, et qui, dans les circonstances où nous sommes placés, va rarement jusqu'à la congélation de l'eau, doit présenter des propriétés opposées à celles de la chaleur, c'est-à-dire avoir une action hyposthénisante.

C'est ce qui a lieu, en effet, pour la glace, dont la médecine et la chirurgie tirent de grands avantages dans les cas de congestion et d'inflammation.

Mais si l'on se rend un compte exact de l'action du froid, précisément dans les circonstances que je viens de rappeler, on se convaincra qu'elle est surtout caractérisée par le resserrement des tissus sur lesquels elle s'exerce, resserrement qui empêche l'afflux du sang dans les parties malades, et qui facilite l'écoulement de celui qui constituait soit la congestion, soit l'inflammation. Un froid moins intense doit nécessairement produire un effet moins énergique, et l'on peut ainsi ramener l'action *resserrante* du froid à une action purement tonique.

C'est en effet ce que l'expérience a prouvé ; et bien souvent j'ai eu à me louer de l'action modérée du froid dans les cas d'atonie, de relâchement du tissu de la verge.

Le froid appliqué d'une manière générale, comme dans les bains de mer, dans les bains de rivières, les douches de toutes sortes, surtout en été, est une puissante ressource entre les mains du médecin, comme j'aurai tout à l'heure occasion de le dire, en parlant de l'hydrothérapie, des eaux minérales et des bains de mer.

Mais dans l'impuissance idiopathique, c'est surtout à l'application locale du froid qu'il faut avoir recours; j'ordonne ordinairement, comme simple adjuvant d'une médication plus énergique, des lavages à l'eau froide sur les parties génitales, le périnée et les lombes, tous les matins, et j'ai eu bien souvent à me louer de cette pratique.

C. — *Moyens mécaniques d'excitation.*

Massage. — Le massage, employé comme moyen hygiénique chez tous les peuples de l'Orient et du nord de l'Europe, dont il relève les forces et l'énergie, s'administre toujours à une haute température, de 25 à 36 degré Réaumur, soit dans une étuve sèche, soit dans une étuve humide, soit dans le bain. Comme il est toujours possible de varier la température de l'étuve et de modifier le milieu dans lequel on place le malade avant ou après le massage, on comprend que l'on peut, selon la constitution individuelle, augmenter ou diminuer le degré d'excitation que l'on se propose.

« Il est difficile de croire, disent MM. Trousseau et Pidoux, qu'un pareil moyen n'ait pas une influence puissante sur l'homme malade. — aussi est-il d'expérience que dans les rhumatismes aigus non fébriles, dans les rhumatismes chroniques, dans les paralysies qui sont en voie de guérison, dans l'impuissance vénérienne, cette médication est suivie d'heureux résultats (1). »

Pourtant le massage ne peut constituer à lui seul toute la médication; c'est un adjuvant énergique dont j'ai retiré de bons effets dans maintes circonstances, mais, je le répète, ce n'est qu'un adjuvant, ou plutôt un complément de médication, comme *dans les paralysies en voie de guérison.*

M. Sarlandière, considérant la difficulté de rencontrer dans nos pays des personnes assez habiles dans l'art du massage, et prenant égard à la fatigue qu'il cause à celui qui l'exerce, a pensé que l'on pourrait atteindre le même but par une percussion molle, plus ou moins forte, plus ou moins lente, à l'aide d'un corps non contondant et placé au bout d'un levier, afin de moins fatiguer l'opérateur. A cet effet, il a fait confectionner des battoirs élastiques dont la palette circulaire, de quatre pouces de diamètre, est adaptée à un manche de dix pouces de longueur. Les palettes rembourrées de crin, sont recouvertes de flanelle pour les percussions à sec, et de feutre et de caoutchouc pour les percussions au milieu de la vapeur aqueuse.

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(1) Trousseau et Pidoux, *Traité de thérapeutique et de matière médicale*, 9ᵉ édit., t. I, p. 868.

Ce mode de massage, dont je suis loin de contester les avantages, et dont l'action excitante est nécessairement limitée aux parties sur lesquelles elle s'exerce, a tellement d'analogie avec la flagellation, non-seulement pour le mode opératoire, mais encore pour les effets produits, que je renvoie à l'article *Flagellation* les considérations que je pourrais ajouter sur le massage par percussion.

Frictions.—On distingue les frictions en frictions sèches et en frictions humides.

Les frictions humides s'exécutent au moyen d'une brosse en flanelle ou d'un tampon en un tissu quelconque, imprégné d'un agent médicamenteux, soit en poudre fine, soit en pommade, soit en liquide.

Les frictions sèches ou humides, qu'on les fasse tout le long de la colonne vertébrale, ou qu'on les limite au périnée et à la base de la verge, sont d'un puissant secours dans des cas nombreux d'impuissance.

L'action excitante des frictions peut être singulièrement augmentée par la présence d'un agent médicamenteux qui, grâce aux modifications subies par la peau et par les bouches les plus superficielles des vaisseaux absorbants, pénètre avec plus de facilité dans l'organisme, et porte ses propriétés d'abord sur le point qui lui donne accès, et plus tard dans l'économie toute entière.

Flagellation, urtication. — « Je connais, dit Pic de la Mirandole, et il existe encore un homme dont le tempérament amoureux et les excès n'ont peut-être jamais eu d'exemple : il ne peut caresser une femme, malgré la violence de ses désirs, s'il n'est auparavant fustigé; en vain sa raison lui fait regarder comme un crime ce raffinement de volupté. Sa fureur pour ce cruel plaisir est telle qu'il encourage lui-même, et accuse de mollesse et de lacheté celui qui le fouette, lorsque la fatigue ou la pitié lui font ralentir ses efforts. Le patient n'est au comble de ses plaisirs qu'en voyant ruisseler le sang dont une grêle affreuse de coups a couvert les membres innocents du libertin le plus effréné : ce malheureux réclame ordinairement pour ce service, avec les plus instantes supplications, la main de la femme avilie dont il veut jouir, lui donne lui même les verges qu'il a fait tremper, dès la veille, dans le vinaigre, et lui demande à genoux la faveur insigne d'être ainsi déchiré. Plus elle frappe avec violence, plus elle acquiert de droits à son amour et à sa reconnaissance, en lui rendant des feux qu'il n'avait plus, jusqu'à ce que le dernier période de la souffrance et l'épuisement total de ses forces lui fassent goûter la plénitude de la volupté en égale proportion. Trouvez un seul homme pour qui le comble de la douleur et cette espèce de torture doivent être celui du plaisir, et si d'ailleurs il n'est pas entièrement corrompu, lorsque de sang-froid il connaîtra sa maladie, il rougira de ses excès et les détestera (1). »

La flagellation, employée comme moyen d'éveiller le sens vénérien, nous a été transmise par les anciens ; presque tous les auteurs grecs et romains en font mention, ainsi que des fêtes instituées en l'honneur de Priape, pendant lesquelles les hommes et les femmes se battaient mutuellement de verges, pour mieux s'exciter à l'amour. Tamerlan, celui-là même qui se faisait appeler *le Fils de Dieu*, fut père de cent enfants, et ne parvint, dit-on, à cette innombrable progéniture qu'avec l'aide de la flagellation. L'abbé Terrasson, l'auteur du *Voyage de Séthos*, qui, au dire de Voltaire, prenait un goût particulier à se faire administrer le fouet par les courtisanes, s'attira une épigramme connue dont je ne rappellerai que le dernier vers : *Frappez fort*, *il a fait Séthos*. J.-J. Rousseau a décrit l'effet qu'il ressentit, étant enfant, à la suite de la correction que lui administra Mlle Lambercier : « Assez longtemps, dit-il, elle s'en tint à la menace, et cette menace d'un châtiment tout nouveau pour moi me semblait très-effrayante ; mais, après l'exécution, je la trouvai moins terrible à l'épreuve que l'attente ne l'avait été ; et ce qu'il y a de plus bizarre, c'est que ce châtiment m'affectionna davantage encore à celle qui me l'avait imposé. Il fallait même toute la vérité de cette affection et toute ma douceur naturelle pour m'empêcher de chercher le retour du même traitement, en le méritant ; car j'avais trouvé dans la douleur, dans la honte même, un mélange de sensualité qui m'avait laissé plus de désirs que de crainte de l'éprouver derechef par la même main (1). » A une seconde correction, Mlle Lambercier s'étant aperçue, *à quelques signes*, de l'espèce de sensualité qu'éprouvait Jean-Jacques, comprit que le châtiment n'atteignait pas le but qu'elle se proposait, et y renonça.

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(1) Pic de le Mirandole, *Œuvres complètes*, Bologne, 1495, 1 vol in-fol. — *Contra astrologos*, lib. III, cap. XXVII.

Plusieurs ouvrages ont été consacrés à la flagellation, et parmi les principaux on pourra consulter ceux de J.-H. Meibomius (2), de Doppet (3), et de l'abbé Boileau (4).

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(1) J.-J. Rousseau, *Confessions*, liv. I.

(2) Meibomius, *De flagrorum usu in re medicâ et venereâ et lumborum renumque officio*. Texte latin, Londres, 1765, in-32 et Francfort, 1770, in-8 ; traduction in-32, an VIII (1800). Paris, chez Mercier.

(3) Doppet, *Traité du fouet ou aphrodisiaque externe*, par un amateur. 1 vol. in-32. S. D (1788). Paris, sans nom de libraire.

(4) *Histoire des flagellans*, par l'abbé Boileau, traduit du latin, 1 vol.

J'ai été moi-même plusieurs fois témoin de l'efficacité d'un pareil moyen ; mais ses effets, essentiellement passagers, me l'ont toujours fait regarder comme la suprême espérance de ceux qui n'en ont plus, et je l'ai mis au rang des étranges auxillaires de la débauche dont notre ministère ne doit jamais être le complice.

D'ailleurs on peut facilement remplacer la flagellation par d'autres moyens capables, comme elle, d'exciter la chaleur locale; on a les frictions sèches ou humides, les fomentations, les ventouses, les sinapismes, les moxas, les vésicatoires et tous les révulsifs; il n'est donc pas besoin de recourir à une pratique barbare et que la débauche a compromise.

Les motifs qui me font proscrire la flagellation me font également repousser l'*urtication*, qui n'est qu'une variété de la flagellation violente dont on augmente la force par les aiguillons des orties. Le médecin, je le repète, ne doit point disputer aux lupanars une pareille ressource qui ne produit qu'un effet passager, et qui ne saurait entrer dans le domaine de la thérapeutique.

Ventouse. — J'ai déjà parlé de ce moyen très-vanté par Mondat (1). On se propose, à l'aide d'un cylindre armé d'une pompe aspirante, d'attirer le sang dans les corps caverneux et de déterminer mécaniquement une érection. Ce moyen, qui ne réussit pas toujours, pourrait ne pas être sans danger, si l'on agissait brusquement et avec violence; il ne faut arriver que progressivement à un vide complet, et la durée et le nombre des séances sont proportionnés à la force élastique des tissus; de plus, on s'abstiendra de l'emploi d'un semblable

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in-12. Amsterdam, 1701 (La traduction de 1701 est la meilleure et la plus complète, elle contient des détails supprimés dans l'édition de 1732 donnée par l'abbé Granet).

(1) Mondat, *De la stérilité de l'homme et de la femme*, 5e édit. Paris, 1840,

moyen chez les malades irritables et dont la sensibilité générale ou locale est facilement mise en jeu; on ne devra guère y recourir que pour les sujets lymphatiques, pour ceux dont la circulation est paresseuse et chez lesquels le système vasculaire est, en quelque sorte, frappé d'atonie. Il suit de là que l'usage seul de la ventouse est complétement impuissant à produire une érection durable, et qu'une médication générale excitante en doit seconder et soutenir les effets.

Sinapisme. — Le but que l'on se propose avec le cylindre à pompe aspirante m'a donné l'idée d'arriver au même résultat en m'appuyant, non sur les lois de la mécanique, mais sur les lois vitales; j'ai pensé qu'il était quelquefois préférable d'augmenter l'afflux du sang dans les corps caverneux et le gland, par une modification pathologique des tissus, modification qui n'offre aucun inconvénient, puisqu'on est toujours maître d'en graduer l'intensité. A cet effet, je fais préparer un cataplasme composé de farine de graines de lin et de farine de moutarde, dans des proportions différentes selon l'action que l'on veut produire, et j'en enveloppe toute la verge, qui reste ainsi dans cette espèce de fourreau plus ou moins longtemps, de dix minutes à un quart d'heure d'ordinaire.

Ce moyen, que je suis étonné de n'avoir vu indiqué nulle part (1), m'a rendu parfois de signalés services et a heureusement remplacé l'instrument mécanique dont je parlais tout à l'heure.

L'application sur la verge d'un sinapisme, même adouci par la présence de la farine de graines de lin, n'est pas toujours sans douleur, et le coït, exercé sous l'empire d'un semblable excitant, pourrait être plutôt un supplice qu'une volupté; pour calmer cette souffrance qui, quelquefois, ne se fait pas sentir ou qui est passagère, j'ordonne de pratiquer sur le pénis des lotions avec l'eau fraîche, et cette simple précaution permet souvent au malade une copulation sans douleur.

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(1) Il est vrai que Gesner et Chaptal vantent la moutarde comme aphrodisiaque, mais ils l'employaient sous forme de bains. — Voyez l'article IMPUISSANCE du *Dictionnaire des sciences médicales*, 1818, t. XXIV, p. 192.

Le cataplasme sinapisé est un moyen énergique, et qui, par conséquent, réclame de la prudence et de la circonspection. En agissant en aveugle, on s'expose au pénitis ou inflammation de la verge, et même à la gangrène de cet organe. Il faut, en règle générale, enlever le cataplasme dès que le malade accuse ce qu'il appelle des picotements; presque toujours, un effet suffisant est alors produit, et l'on ne doit faire une nouvelle application que le lendemain ou même plusieurs jours après la première. Le nombre total de ces applications ne saurait être déterminé à l'avance; il est subordonné aux effets obtenus et à l'état d'irritation de la verge.

Bien évidemment la médication générale ne sera point négligée, et l'on y apportera d'autant plus de soins que le malade sera moins sensible à l'action du sinapisme.

II. — EXCITATEURS.

A. — *Médicaments excitateurs.*

Les agents médicamenteux, que l'on désigne sous le nom d'*excitateurs*, ne s'adressent plus au système vasculaire et aux nutritions, comme les *excitants*, mais portent leur action sur les centres et les conducteurs nerveux qui président aux contractions des muscles de la vie animale et de la vie organique.

Si l'on se rappelle le rôle considérable que jouent les nerfs vaso-moteurs et les muscles de la verge et du périnée dans le phénomène de l'érection du pénis, on comprendra toute l'importance qu'il faut attacher à des agents qui peuvent réveiller la contractilité de ces muscles et de ces nerfs.

Au premier rang des substances médicamenteuses qui possèdent cette propriété, il faut mettre la *noix vomique* et ses deux alcaloïdes, la *brucine* et la *strychnine*, cette dernière surtout.

Depuis longtemps déjà, MM. Trousseau et Pidoux avaient noté l'action heureuse de la noix vomique contre l'impuissance, et leurs observations ultérieures n'ont pas démenti ce qu'ils écrivaient dès la première apparition de leur ouvrage : « nous parlons maintenant, disent-ils dans toutes leurs éditions, de l'impuissance contre laquelle nous avons eu l'idée d'employer la noix vomique. Nous avons été conduits à cette médication, d'abord par l'analogie et ensuite par l'observation des phénomènes que nous avions excités chez un de nos malades. C'était un homme atteint depuis trois ans d'une paraplégie complète avec tremblement général. Les membres thoraciques et abdominaux, la vessie, le rectum étaient paralysés du mouvement; la sensibilité était conservée; l'intelligence était d'ailleurs entière. Depuis le début de la maladie, l'excitabilité des organes génitaux était complétement éteinte. Sous l'influence de la noix vomique, les mouvements se rétablirent presque complétement, le tremblement cessa, et après un mois de traitement, survinrent des érections qui, d'abord faibles, acquirent bientôt la même énergie qu'auparavant et revinrent chaque nuit. Bientôt, fixant notre attention sur ce curieux phénomène, nous constatâmes les mêmes effets sur un couvreur, âgé de quarante ans, qui avait un affaiblissement notable des extrémités inférieures et qui, depuis sept mois n'avait pu avoir de rapports avec sa femme. En quinze jours de traitement, il marchait d'un pas plus assuré; mais les organes génitaux étaient dans un état d'irritation d'autant plus remarquable que les forces musculaires ne se rétablissaient pas avec la même énergie. Nous avons, chez une femme, observé les mêmes effets. Enfin chez un jeune homme de vingt-cinq ans, constitué d'ailleurs comme un athlète, mais qui depuis dix-huit mois qu'il était marié, n'avait eu avec sa femme que des rapports presque fraternels, nous sommes parvenus à lui donner une virilité qu'il perdit bientôt, quelque temps après qu'il eut cessé l'usage de la noix vomique » (1).

Malgré ce dernier exemple, il n'est pas rare de voir l'action de la noix vomique persister, et les malades guérir soit de leurs paralysies, soit de leur impuissance, qui est elle-même une paralysie ou une faiblesse des conducteurs nerveux.

Bien que l'action excitatrice que la noix vomique et, mieux encore, que la strychnine exercent sur l'innervation génitale, n'ait rien de spécifique, puisque la même action se fait également sentir sur les autres parties du système nerveux, il faut tenir grand compte de cette influence, car, en dehors de cette substance et de ses deux alcaloïdes, nous n'avons que des agents dont la puissance est moindre et plus incertaine.

Ce sont :

1° La *fève de Saint-Ignace*, qui se rapproche le plus de la noix vomique par la quantité de strychnine qu'elle contient;

2° Le *Rhus toxicodendron* et le *Rhus radicans*, dont l'action est bien inférieure à celle de la noix vomique;

3° La *coca du Pérou*, qui est plus célèbre par la tradition des Incas que par l'expérience;

4° Enfin l'*ergot de seigle*, qui, malgré son importance en obstétrique pour activer les contractions de l'utérus, et malgré ses bons effets dans le traitement de la spermatorrhée, ainsi que je le dirai plus loin, n'offre pas, dans le sujet qui nous occupe, les mêmes garanties que la noix vomique.

Cependant on ne saurait avoir trop d'armes à sa disposition, et c'est pour ce motif que j'ai signalé ces agents à côté de la noix vomique et surtout de la strychnine.

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(1) *Traité de thérapeutique et de matière médicale*, 2e édit. t. I, p. 792; et 8e édit., t. II, p. 12.

On emploie les uns et les autres, à l'intérieur, sous forme de pilules ou de solutions, et à l'extérieur, en frictions sur l'appareil génital où ils font office d'excitateurs locaux.

B. — *Excitateurs impondérables.*

Électricité. — Les applications thérapeutiques de l'électricité se sont modifiées, on le comprend, avec les progrès de la physique sur cette branche de la science : avant la découverte de Galvani, l'électricité statique ou de tension était seule employée, soit sous forme de bain, soit sous forme d'étincelles (1) ; plus tard, après l'invention de la pile de Volta, on s'adressa aux courants, soit continus, soit intermittents ; et enfin, dans ces dernières années, lorsque Faraday et A. de la Rive (2) eurent fait connaître les influences réciproques des courants sur les aimants et des aimants sur les courants, on recourut aux appareils consacrés à cette nouvelle forme d'électricité.

Mise ainsi en possession de trois modes différents d'électrisation : 1° électricité statique ou par tension ; 2° électricité galvanique ou par contact ; et 3° électricité magnétique ou par induction, la médecine se devait d'étudier leurs actions physiologiques et pathologiques diverses ; en d'autres termes, elle devait s'assurer s'il était indifférent de puiser à l'une de ces trois sources, ou s'il fallait établir entre elles des distinctions basées sur une diversité d'action.

C'est en effet ce qu'elle n'a pas manqué de faire.

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(1) Voyez l'ouvrage du Mauduyt, *Mémoire sur les différentes manières d'administrer l'électricité, et observations sur les effets qu'elles ont produits*, 1 vol. in-8, 1784, imprimé par ordre du roi.

(2) De la Rive, *Traité d'électricité théorique et appliquée*. Paris, 1854 et 1855, 3 vol. in-8.

Le bain électrique positif a été généralement abandonné à cause de la nullité de ses effets, et le bain électrique négatif n'est conservé que par l'école italienne, en raison de son pouvoir hyposthénisant très-vanté par Giacomini.

L'électrisation par étincelles ou par la bouteille de Leyde a seule été maintenue dans la thérapeutique, et ses effets ont été depuis longtemps distingués de ceux du galvanisme : « Bien que l'électricité que l'on obtient au moyen du frottement par la machine électrique soit de même nature que celle produite par la pile galvanique, nous devons faire remarquer cependant que la première convient mieux quand il s'agit d'exciter les muscles de la vie de relation. Le galvanisme, au contraire, est préférable lorsqu'on veut agir sur la sensibilité et sur les organes délicats ou sur les muscles de la vie organique (1). »

Duchenne (de Boulogne) est loin de partager l'opinion de Pallas, qui est celle de tous ses devanciers. Dans un ouvrage important (2), ce savant regretté, après avoir reproché à l'électricité de tension de n'agir que sur les muscles superficiels, et de produire des commotions qui ne sont pas sans danger, conclut de la manière suivante : « En somme, dit-il, l'excitation musculaire par l'électricité statique doit être exclue, selon moi, de la pratique, d'autant qu'elle peut être remplacée par un autre agent électrique qui excite plus énergiquement et plus efficacement la contractilité musculaire, sans offrir aucun de ses inconvénients. »

Cependant Duchenne est obligé de reconnaître que l'électrisation par étincelles ou par la bouteille de Leyde n'est pas toujours aussi insignifiante qu'il le prétend, et il s'en console en avouant que « ces résultats prouvent seulement que certaines paralysies guérissent toujours sous l'influence de l'électricité, de quelque manière et sous quelque forme qu'on l'administre. » Ces résultats heureux ne sont pas aussi exceptionnels que semble le croire Duchenne, car le docteur Golding Bird, chargé de l'application de l'électricité à l'hôpital Guy, à Londres, qui ne se sert que de la machine à frottement, accuse des succès presque constants dans les paralysies qui ne sont pas sous la dépendance d'une affection des centres nerveux.

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(1) Pallas, *De l'influence de l'électricité atmosphérique et terrestre sur l'organisation*, 1 vol. in-8. Paris, 1847, p. 75.

(2) Duchenne (de Boulogne), *De l'électrisation localisée*, 3e édition.

L'électricité par contact ou le galvanisme agit à travers les tissus, dans la plus grande profondeur, sur les muscles, sur les os même, et de plus son action peut être limitée sur un point donné. Sa puissance excitatrice ne se développe qu'avec un courant intermittent, car Matteucci, tirant des déductions thérapeutiques de ses vivisections, a conseillé l'emploi d'un courant continu, comme hyposthénisant du système nerveux dans le tétanos. Mais pour obtenir cette puissance excitatrice, pour lutter contre des paralysies du mouvement, celles surtout dans lesquelles la nutrition musculaire est altérée et la sensibilité diminuée, il faut recourir à des batteries très fortes, de 102 à 120 piles da Bunsen, dont l'emploi, on le comprend, pourrait ne pas être sans danger. D'ailleurs, comme le fait justement remarquer Duchenne, les appareils galvaniques (batteries de Cruikshank, de Bunsen, piles de Wollaston) sont difficilement applicables dans la pratique, soit à cause de leur volume, soit à cause de l'emploi des acides qu'ils nécessitent, soit à cause des gaz qui s'én dégagent. Enfin l'intensité de leurs courants est trop variable pour être soumise à une graduation exacte et précise.

Duchenne, dont toutes les préférences sont acquises à l'électricité d'induction, en fait ressortir comme il suit les avantages : « L'électricité d'induction, dit-il, est celle qui convient le mieux à l'excitation musculaire dans le traitement des paralysies du mouvement, dans les affections choréiques ; on peut en effet l'appliquer à la contractilité musculaire sans produire de douleurs, sans craindre de surexciter le sujet, à quelque dose qu'on agisse, pourvu que les intermittences du courant soient assez éloignées les unes des autres.

» Il est souvent besoin d'un courant des plus intenses dans le traitement de certaines affections musculaires. Alors, l'électricité d'induction est la seule applicable, parcequ'elle n'exerce pas d'action calorifique, comme l'électricité de contact.

» Enfin les appareils d'induction peuvent, sous un petit volume, agir sur la contractilité avec une puissance considérable; ce qui facilite singulièrement leur application (1). »

Grâce aux courants électriques, qu'ils soient dus au galvanisme ou à l'électricité d'induction, on peut porter l'action thérapeutique de cet agent jusque dans les profondeurs les plus reculées des organes, ce qu'il était impossible d'obtenir avec l'électricité statique. Le vérumontanum, les conduits éjaculateurs, les vésicules séminales, tous les points du parcours de l'urèthre peuvent directement recevoir l'influence électrique et être traversés par un courant, sans que les parties voisines participent à cette excitation.

Je ferai connaître le mode opératoire, au fur et à mesure que les indications se présenteront; mais j'ai tenu ici à indiquer d'avance les ressources nouvelles que l'électricité dynamique a mises entre les mains du praticien, en variant à l'infini les modés de son application.

Magnétisme. — Les expériences d'OErsted, d'Ampère et d'Arago ayant démontré l'identité des phénomènes magnétiques et des courants électriques, j'aurai peu de chose à ajouter, sur la vertu thérapeutique des aimants, à ce que j'ai dit des propriétés excitatrices de l'électricité, d'autant plus que des insuccès par le magnétisme me font toujours préférer, dans le traitement de l'impuissance, l'électrisation, soit statique, soit dynamique.

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(1) Duchenne (de Boulogne), *De l'électrisation localisée et de son application à la pathologie et à la thérapeutique*, 3e édit. Paris, 1872, p. 33.

Les plaques aimantées ne conviennent guère que chez les sujets pusillanimes, chez les personnes excessivement irritables, et dans les cas de sensibilité exagérée des organes génitaux.

C'est à ce titre que les armures aimantées du père Hell trouvent ici une place.

Ces armures sont composées, on le sait, de plusieurs pièces d'acier aimanté, percées à leurs extrémités de trous destinés aux lacets à l'aide desquels on les attache les unes aux autres, en ayant soin de les opposer pôle à pôle, c'est-à-dire que le pôle sud de l'une regarde le pôle nord de l'autre.

Dans les expériences que j'ai faites sur les organes génitaux, je me suis servi de deux ou trois plaques. L'une entourait la verge, surtout à sa base, où se trouvent les dernières fibres de l'ischio-caverneux ; l'autre, placée au périnée, jusque sur le bulbe de l'urèthre, embrassait le bulbo-caverneux dans toute son étendue, depuis le muscle transverse du périnée, le sphincter et le releveur de l'anus, jusqu'à la racine des corps caverneux. Enfin, dans les circonstances où je me suis servi de trois plaques, je mettais la troisième à la partie inférieure des lombes, dans la portion du sacrum correspondante au plexus sacré.

Les plaques peuvent rester en place depuis quelques jours jusqu'à un mois ; mais il faut avoir soin, lorsqu'elles doivent demeurer en contact avec la peau plus de quinze jours, de les faire réaimanter avant ce temps, ou de recouvrir la face interne des armures d'une feuille d'argent ou de platine.

C. — *Excitateurs mécaniques.*

Acupuncture. — *Électro-puncture.* — Il est bien évident, disent MM. Trousseau et Pidoux, que l'aiguille enfoncée dans les fibres musculaires de la vie animale ou de la vie organique, agit en excitant leur contraction, et ce phénomène tout expérimental peut se passer sous nos yeux. A ce titre l'acupuncture doit évidemment se ranger parmi les moyens excitateurs (1).

De tous les travaux qui ont été publiés sur l'acupuncture, aucun n'est relatif à l'emploi de ce moyen contre l'impuissance ; on l'a préconisé avec raison dans le rhumatisme, la sciatique, les névralgies, etc. ; et les essais que j'ai tentés dans l'anaphrodisie m'ont expliqué le silence des auteurs sur ce point. A moins que l'impuissance ne soit accompagnée d'un vice rhumatismal, l'acupuncture m'a toujours paru un moyen douteux et d'un effet peu durable. Une ou deux fois au plus, sur vingt expériences, je suis parvenu à réveiller *momentanément* et *légèrement* la sensibilité, et j'ai constamment échoué dans les autres cas.

Mais il n'en est pas de même de l'électro-puncture ; c'est une ressource heureuse et énergique pour conduire profondément l'électricité qui, ainsi que nous l'avons vu, agit superficiellement, lorsqu'elle est appliquée par les moyens ordinaires. Mais en raison même de la pénétration du fluide dans les tissus les plus cachés, l'opération exige certaines précautions qu'il est utile d'observer. Si c'est à l'électricité statique que l'on a recours, une seule aiguille peut suffire : on l'implante tantôt dans les muscles du périnée, tantôt dans les fibres supérieures du bulbo-caverneux, et l'on peut même, après avoir traversé l'ischio-caverneux, aller jusqu'aux branches des corps caverneux. On met alors l'aiguille en communication avec un des conducteurs de la machine électrique, ou avec l'armature extérieure de la bouteille de Leyde médiocrement chargée, et l'on tire quelques étincelles. L'opération ne doit pas durer plus d'un quart d'heure, et le nombre des étincelles sera toujours proportionné à la sensibilité locale ou générale du sujet.

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(1) Trousseau et Pidoux, *Traité de thérapeutique et de matière médicale*, 8ᵉ édit,, t. II, p. 90.

Les courants galvaniques peuvent s'établir avec une seule aiguille : celle-ci est alors mise en communication avec le pôle positif de la pile, tandis que le pôle négatif est en contact avec une autre partie du corps; mais le plus ordinairement on se sert de deux aiguilles dont les têtes, percées d'une ouverture, reçoivent les conducteurs de la pile. Le lieu où les aiguilles sont placées est très-variable : le périnée, la base de la verge, le scrotum, les corps caverneux eux-mêmes, peuvent recevoir les aiguilles, et le choix en est déterminé par les indications particulières que présentent les sujets.

Mais dans tous les cas, il faut avoir soin de ne donner d'abord que de légères secousses, et de n'augmenter l'intensité et la durée des courants que si la partie est profondément insensible, et si le malade les supporte avec facilité. En règle générale, l'électricité, que ce soit l'électricité statique ou galvanique, unie à l'acupuncture, exige que les secousses soient d'autant plus énergiques et d'autant plus souvent répétées, que l'impuissance est plus ancienne, que la circulation capillaire est moins active, et que les tissus sur lesquels on opère sont doués d'une moindre sensibilité.

III — EXCITANTS HYDRO-MINÉRAUX

Hydrothérapie. — L'eau peut être employée à diverses températures, et l'on peut dire qu'il y a l'hydrothérapie à l'eau chaude et l'hydrothérapie à l'eau froide.

On peut encore étudier l'action de l'eau selon qu'elle est prise intérieurement ou appliquée à l'extérieur.

Il ne sera ici question que de l'emploi externe de l'eau.

L'eau chaude appelle le sang vers la périphérie et détermine des sueurs par suite du relâchement des fibres lisses des capillaires,

L'eau froide amène secondairement les mêmes effets ; mais primitivement elle fait contracter les fibres lisses des vaisseaux, d'où le reflux du sang vers les centres ; ce n'est qu'après la cessation de l'impression du froid, ou même pendant sa prolongation que les fibres lisses se relâchent, et qu'il se produit les phénomènes dits *de réaction*, caractérisés par un reflux du sang plus considérable vers la périphérie, et conséquemment par un retour à une calorification plus accentuée.

A ce point de vue, l'hydrothérapie nous offre des ressources remarquables d'excitation, et c'est toujours à une basse température que l'eau devra être employée.

Les bains, les douches et les affusions sont les modes les plus ordinaires de l'hydrothérapie ; les uns et les autres peuvent être généraux ou locaux, selon que l'excitation doit s'adresser à toute l'économie comme un tonique, ou à une partie seule du corps pour en activer la circulation et la nutrition.

Le sujet qui nous occupe, c'est-à-dire le traitement de l'impuissance, trouve dans l'hydrothérapie, par l'eau froide, des ressources précieuses que l'observation et l'expérience ont pleinement confirmées. Les douches générales, vertébrales et périnéales occupent la plus large place dans cette thérapeutique à laquelle les affusions ne servent guère que d'adjuvants.

Mais pour que la douche produise un effet excitant, il faut qu'elle soit de courte durée et qu'elle ne dépasse guère une ou deux minutes.

De plus, et je me trouve bien de cette recommandation, je conseille quelques jours de repos après une vingtaine de douches successives, autant pour prévenir un excès d'excitation que pour ne pas user le remède.

Eaux minérales. — La médication par les eaux minérales est interne ou externe, ou mixte, c'est-à-dire que l'agent employé peut l'être indistinctement à l'intérieur et à l'extérieur.

Le type des eaux minérales à traitement interne, c'est-à-dire par la boisson, se trouve dans les eaux alcalines.

Le type des eaux minérales à traitement externe, c'est-à-dire en bains et en douches, se rencontre dans les eaux sulfureuses.

Enfin le type des eaux minérales à traitement myxte réside dans les eaux salines.

Sans doute ces principes ne sont pas absolus, surtout dans la pratique, car on se baigne à Vichy, et l'on boit à Luchon ; mais ils peuvent servir de point de départ pour diriger l'emploi des eaux minérales dans le traitement de l'impuissance.

Au point de vue de la médication interne, nous ne nous arrêterons qu'aux eaux alcalines, à celles surtout qui contiennent des éléments reconstituants, comme le fer et l'arsenic.

Le nombre des eaux alcalines ferrugineuses est très-considérable. mais toutes ne sont pas aptes à être supportées ; pour que l'estomac les accepte et en absorbe les principes, il faut que le liquide soit chargé d'acide carbonique, ce qui ne se rencontre pas dans toutes les eaux dites ferrugineuses.

Quoi qu'on en ait prétendu, les eaux alcalines, gazeuses et ferrugineuses n'ont point une action directe sur l'appareil génital ; elles n'agissent sur lui que secondairement, par l'impression qu'elles impriment à la nutrition, et par le relèvement des forces vitales qui en est la conséquence.

Cette influence n'est point à dédaigner et elle devient plus importante encore, si, comme on le fait dans plusieurs établissements, on seconde l'action reconstituante de la boisson par l'action tonique et excitante de douches froides.

Les eaux arsenicales, moins reconstituantes que les eaux ferrugineuses, ne peuvent être continuées longtemps sans exposer le malade à une intoxication dont nous verrons plus loin les dangers.

Jusqu'ici je n'ai encore rien dit de la température que doit avoir l'eau minérale prise en boisson, parce que cette circonstance ne vient qu'en seconde ligne.

Mais il n'en est pas de même quand le traitement est externe, quand il se résume en des bains et des douches.

Évidemment, quand on s'adresse aux eaux minérales, c'est pour tirer profit des éléments médicamenteux qu'elles contiennent, et les introduire dans l'économie, soit par la digestion soit par l'absorption.

Celle-ci qui a principalement la peau pour organe, se fait lentement et d'autant moins vite que la température est moins élevée.

Il faut donc que l'eau minérale soit chaude, pour que l'enveloppe cutanée ait le temps d'en absorber les principes, et pour que le corps puisse, sans un excès de sédation, attendre cette absorption. Celle-ci n'est possible qu'aux bains.

La douche, à moins qu'elle ne soit prolongée pendant un temps indéfini — et encore on ne serait pas sûr du résultat, — n'amène aucune absorption, parce que les molécules minérales glissent sur la peau, et n'ont pas le temps de se laisser absorber.

L'action des douches est donc toute entière dans leur température et aussi dans le choc qui simule assez bien la flagellation, de sorte que l'on pourrait appeler la douche une *flagellation humide*, froide ou chaude.

Il reste, pour le traitement externe, en ne tenant compte que de la composition de l'eau, le bain, soit entier, soit partiel, suivi ou non suivi de sudation ou de massage.

Mais quelle que soit sa forme, le bain sulfureux est incontestablement excitant et concourt merveilleusement à relever les forces; s'il est secondé par un bon régime, il peut au besoin, comme en hiver, remplacer les bains de mer dont je parlerai tout à l'heure.

Enfin les eaux salines, à moins d'une dérivation sur le tube digestif ou d'un dégorgement de ce que les Allemands appellent la *pléthore abdominale*, les eaux salines, disons-nous, prises à l'intérieur, sont d'un faible secours dans le traitement de l'impuissance.

Toute leur action, dans la majorité des cas qui nous intéressent, se rencontre dans leur emploi en bains et en douches.

Leur histoire se confond avec celle des bains de mer dont je vais maintenant parler.

Bains de mer. — Les bains de mer agissent par la température de l'eau, par sa composition et par le choc de ses vagues qui se rapproche assez de la douche pour avoir imposé son nom à une de ses formes, *la douche en lames*.

Au point de vue de la température, le bain de mer est l'application du froid sur tout le tégument externe; nous avons vu plus haut que cette application produisait une action éminemment tonique, par suite de la réaction qui succède à l'impression du froid.

Sous le rapport de sa composition, l'eau de mer renferme surtout du chlorure de sodium, que j'ai déjà signalé comme un excitant minéral, consacré par l'expérience de tous les âges.

Comme choc, à moins que la mer ne soit fortement agitée, la douche en lame est loin d'avoir la puissance de la douche en jet; mais son action, quelque faible qu'on la suppose, venant s'ajouter à celles de la température et de la composition de l'eau, fait des bains de mer un puissant moyen de stimulation que le médecin sait habilement mettre à profit.

Il faut aussi rappeler que les malades soumis aux bains de mer vivent au milieu d'une atmosphère marine qui introduit dans l'économie, par les voies respiratoires, les éléments d'une excitation que les personnes irritables ne peuvent même pas supporter.

Je ne parle pas d'autres circonstances accessoires, telles que le grand air, l'insolation, l'exercice, l'absence des préoccupations ordinaires, etc., car toutes ces choses se rencontrent également aux établissements d'eaux minérales; néanmoins le médecin doit en tenir compte, tant au bord de la mer qu'aux établissements thermaux, parce que ces conditions, si elles n'occupent pas la première place, jouent un rôle considérable et bien apprécié par les médecins hydrologues.

IV. — Médication aphrodisiaque.

La médication aphrodisiaque n'a à sa disposition, je ne saurai trop le répéter, aucun médicament spécifique; comme les autres sens, la vue, l'ouïe, le goût, etc., le sens génital puise sa thérapeutique dans les éléments de la thérapeutique générale, malgré l'intervention de l'élément psychique dont je parlerai tout à l'heure.

Mais si aucun médicament ne peut agir sur l'ensemble du sens génital, c'est-à-dire s'adresser tout à la fois aux conditions morales et physiques qui président à l'érection, il est des agents qui, d'une manière générale ou locale, répondent chacun plus ou moins particulièrement à une de ces conditions, si bien qu'en les combinant entre eux, selon les besoins, il est possible d'atteindre le sens génital, soit dans son ensemble, soit seulement dans celles de ses parties qui font défaut.

Ce sont ces combinaisons qui constituent ce que j'appelle la *médication aphrodisiaque.*

Ces combinaisons, comme on le prévoit d'après ce que je viens de dire, se rangent sous trois chefs, selon qu'elles ont pour objectif le consensus érotique, l'innervation ou la circulation; la médication aphrodisiaque comprend donc trois sortes de traitements :

1° Le traitement moral, qui s'adresse au consensus érotique;

2° Le traitement excitateur, dont l'action est dirigée sur le système nerveux;

3° Enfin le traitement excitant, dont l'influence se fait sentir sur le système vasculaire.

Il est rare que la thérapeutique de l'impuissance idiopathique se réduise à un seul de ces traitements; presque toujours il faut agir sur toutes les conditions physiologiques de l'érection, car il y a entre elles une telle connexité, que l'influence exercée sur l'une se fait sentir sur les deux autres.

Ce traitement est lui-même susceptible de combinaisons multiples dont les éléments se trouvent, d'un côté dans les moyens capables d'agir sur l'imagination, et de l'autre dans les agents de la matière médicale que j'ai examinés plus haut.

Tandis que la combinaison des traitements entre eux se tire du caractère même de l'impuissance, la combinaison des éléments de chaque traitement a pour guide l'âge du malade, son tempérament, sa constitution, son état de santé ou de maladie, etc., etc.

J'explique ma pensée :

Si l'impuissance est seulement caractérisée par l'impossibilité de l'érection avec conservation des désirs vénériens, il ne sera pas besoin de faire entrer dans la médication aphrodisiaque le traitement moral.

Lorsque au contraire les désirs vénériens feront défaut; lorsque la verge sera flasque et molle, que le gland sera pâle, décoloré et ridé, ainsi que le fourreau du pénis; lorsque l'artère dorsale aura des battements faibles, facilement compressibles, et que les veines dorsales et superficielles seront affaissées et peu saillantes; lorsque enfin le scrotum distendu ne se contractera sous l'influence ni du froid, ni des attouchements amoureux, il faudra évidemment combiner le traitement moral avec celui qui activera la circulation languissante, c'est-à-dire le traitement excitant.

Lorsque la verge présentera des caractères opposés à ceux que je viens de signaler, c'est-à-dire lorsqu'elle sera dure, tendue quoique pendante, lorsque le gland aura sa coloration normale et que les veines bleuiront sous les téguments, le traitement excitateur devra avoir la préférence, car tout indique que l'innervation affaiblie ne peut plus retenir le sang apporté dans le tissu vasculaire.

Mais, je le répète, on s'exposerait à de nombreux mécomptes si l'on n'agissait exclusivement que sur la fonction qui semble faire défaut; car, d'un côté, l'innervation influence la circulation et par les nerfs-musculaires et par les vaso-moteurs, et d'autre part, le sang a sur le système nerveux une action reconnue de toute antiquité, ainsi que l'atteste l'aphorisme d'Hippocrate : *sanguis moderator nervorum*.

Comme on le voit, dans cette combinaison des traitements entre eux, la médication aphrodisiaque n'a tenu compte que du caractère de l'impuissance, et, selon ce caractère, tout en faisant une part à chacun, a plus particulièrement insisté, tantôt sur le traitement moral, tantôt sur le traitement excitant, tantôt sur le traitement excitateur.

Elle ne s'est inspirée ni de l'âge du malade, ni de sa constitution, ni de son tempérament, ni de sa santé, ni de ses habitudes, ni de ses croyances, ni de son éducation, ni de ses occupations, etc. Elle n'a pris pour guide, je le répète, que le caractère de l'impuissance qu'elle avait à combattre.

Il n'en est plus de même dans le choix et la combinaison des éléments du traitement; ainsi, lorsque le malade aura une constitution apoplectique, ou sera affecté d'une maladie du cœur, on repoussera les excitants généraux, tels que l'hydrothérapie et les bains de mer, par exemple, et on se contentera des excitants locaux ou de ceux dont l'action est nulle sur 'organe central de la circulation.

De même, si l'impuissance s'accompagne d'une phlegmasie aiguë ou chronique de l'appareil urinaire, l'emploi des cantharides est formellement contre-indiquée, car, pour rétablir une fonction de relation, il ne faut point compromettre la vie du malade.

Le traitement moral exige peut-être plus que le traitement physique, du tact et de la prudence dans le choix et la combinaison de ses moyens d'action. Pour respecter toutes les croyances et ne froisser aucun préjugé, conditions nécessaires au succès du traitement, il faut tenir compte de l'éducation première dont l'empreinte peut être modifiée par les accidents de la vie, mais qui ne s'efface jamais; il faut tenir compte aussi des habitudes, du genre de travaux et du milieu où se trouve le malade, et ne se décider dans son choix qu'après avoir soigneusement étudié toutes ces circonstances inhérentes à l'individu.

De plus, l'emploi du moyen choisi, doit être fait avec prudence, car trop de hâte amène souvent le dégoût au lieu de l'excitation; les désirs perdus n'obéissent pas à l'appel inattendu et grossier d'une gravure obscène ou d'une femme nue; ils exigent plus de ménagements et ne veulent être éveillés que d'une manière lente et progressive. Il y a dans les livres, dans les gravures, dans les musées, dans les spectacles, des gradations qu'un médecin prudent et sage sait mettre à profit, avant de recourir à des moyens plus énergiques que lui offrent les bals publics et la fréquentation des femmes libres.

Mais à côté de ces ressources purement psychiques, le traitement moral de l'impuissance trouve un adjuvant utile dans les agents des deux autres traitements; je veux parler de ceux qui peuvent augmenter la sécrétion testiculaire ou activer les fonctions du cervelet ; ici encore, l'état du malade, bien plus que le caractère de l'impuissance, décidera de l'emploi de ces moyens, car il serait dangereux, par exemple, de porter une excitation quelconque sur des testicules menacés ou atteints de sarcocèle ou de tuberculisation.

Comme on le voit, la médication aphrodisiaque se renferme rarement dans l'emploi d'un seul traitement ; presque toujours elle exige l'intervention simultanée des moyens qui s'adressent au consensus érotique, à l'innervation et à la circulation de l'appareil génital.

Ces moyens dont le choix est déterminé par des considérations relatives à l'individu et que j'ai énumérées plus haut, ont une action générale, locale ou de voisinage, selon leur mode d'emploi.

L'action est générale, lorsque l'influence de l'agent ne se fait sentir sur l'appareil génital qu'après s'être exercée sur l'économie tout entière ; de ce nombre sont à peu près tous les médicaments confiés aux premières voies, ou les moyens généraux externes comme l'hydrothérapie et le massage.

L'action est locale, lorsque l'agent s'adresse directement à l'appareil.génital, sans emprunter l'intermédiaire des autres parties de l'organisme ; dans ce cadre se trouvent les irritants (frictions, embrocations, fumigations, etc.), les fluxionnaires, (ventouses, synapismes etc.), enfin l'électricité, le magnétisme et l'acupuncture.

L'action est de voisinage, lorsque l'agent ou le moyen n'influencent l'appareil génital que consécutivement à une modification exercée sur l'appareil voisin. Ainsi, les cantharides ne déterminent la congestion des corps caverneux qu'après avoir produit une phlegmasie vésicale, c'est-à-dire que la cystite cantharidienne se communique de proche en proche à l'appareil génital et devient un véritable pénitis.

Mais quelle que soit l'action, générale, locale ou de voisinage, que l'on mette en œuvre, la médication aphrodisiaque, comme d'ailleurs toutes les médications, veut être soutenue et secondée par une hygiène, physique et morale, appropriée; l'abandon de ce précepte peut compromettre le succès de l'entreprise la mieux conduite, ou tout au moins prolonger une situation pénible pour tout le monde.

En résumé, car il faut clore ce long chapitre, la médication aphrodisiaque comprend : 1° le traitement moral; 2° le traitement excitant; 3° le traitement excitateur.

L'emploi exclusif d'un de ces traitements, ou les diverses combinaisons entre eux sont exclusivement déduits de la forme qu'affecte l'impuissance.

Les éléments de ces divers traitements se recrutent parmi les ressources qui agissent sur l'imagination, parmi les substances de la matière médicale, parmi les fluides impondérables, parmi les emplois de l'eau soit simple, soit minéralisée, et parmi des moyens mécaniques.

Le choix entre toutes ces ressources n'est plus déterminé par le caractère de l'impuissance, comme le choix du traitement, mais par des considérations relatives aux conditions morales et physiques du malade.

Enfin une hygiène, conforme au traitement institué, est le complément nécessaire et indispensable de toute médication aphrodisiaque.

§ II. — Impuissance idiopathique par perversion d'excitabilité.

Dans l'état physiologique, la fonction génitale ne s'accomplit qu'à la condition de la mise en jeu de l'excitabilité morale qui d'abord éveille les désirs vénériens, produit ensuite l'érection de la verge, première manifestation de l'excitabilité physique, la soutient, l'accroît, et concourt pour une bonne part à amener l'éjaculation. Il se passe donc un mouvement réflexe entre l'excitabilité morale et l'excitabilité physique, dont le point de départ est, dans la première, sollicitée *normalement* par des impressions ou des pensées relatives à l'autre sexe.

Telles sont les conditions d'excitabilité pour l'exercice du coït physiologique.

Mais ces conditions peuvent être altérées, non par l'absence de l'excitabilité ou morale ou physique, ce qui constitue la forme d'impuissance que j'ai déjà examinée, mais par la vicieuse direction de cette même excitabilité; en d'autres termes, le *consensus* ou le sens génital peuvent simultanément, ou chacun de son côté, se montrer rebelles à leurs excitants naturels et ne répondre qu'à des sollicitations anormales.

C'est ce que j'appelle l'impuissancs par perversion.

Cette perversion affecte, comme je viens de le dire, tantôt le *consensus* intime, tantôt l'appareil seul de la copulation, et tantôt l'un et l'autre à la fois.

Dans le premier cas la perversion morale amène l'impuissance,c'est-à-dire, je ne puis trop le répéter, l'impossibilité du *coït physiologique*, comme chez le masturbateur, le pédéraste, le sodomiste et la tribade.

Dans le second cas la perversion physique amène l'impuissance, parce qu'une des conditions du coït physiologique fait défaut, comme dans le priapisme où manque l'excitabilité morale, et comme dans l'aspermatisme ou l'éjaculation et par suite le plaisir ne se produisent pas.

Enfin la perversion morale et physique, dont le type est le satyriasis, entraîne de tels désordres que, non-seulement l'impuissance, mais encore la mort peuvent en être la conséquence.

Il importe d'examiner chacune de ces trois formes de perversion.

1° PERVERSION MORALE. — Grâce à l'intelligence dont il est doué, et contrairement aux animaux qui n'ont que l'instinct, l'homme a cherché le plaisir en dehors de la loi naturelle, et malheureusement il ne l'a que trop souvent trouvé: l'onanisme, la sodomie, la pédérastie, la tribadie chez les femmes, sont des infamies qui se perpétuent à travers les civilisations, et qui soustraient celui qui s'y abandonne à l'excitabilité normale du coït. Tout le monde connait la répugnance du masturbateur pour tout ce qui n'est pas son plaisir solitaire, la répulsion du pédéraste pour la femme et de la tribade pour l'homme, et les préférences antinaturelles du vice honteux dont la mémoire poursuit et Gomorrhe et Sodome.

Je ne veux point insister sur ces tableaux qu'un voile épais doit toujours cacher: mais je dois signaler ces vices comme les causes les plus ordinaires de l'impuissance par perversion morale.

Parmi les exemples qu'il me serait facile de trouver soit dans mes notes, soit dans les annales de la corruption de tous les peuples, je me contenterai de rapporter le suivant, parce que d'un côté il ne contient aucun détail odieux, et que de l'autre il renferme un enseignement thérapeutique qu'il est bon de placer sous les yeux du lecteur.

« Un jeune homme, dit Alibert, élevé dans une pension, contracta dans son enfance l'habitude de l'onanisme. Le livre que Tissot a écrit sur ce sujet ayant été mis entre ses mains l'effraya sans le corriger entièrement. Cette lecture le porta néanmoins à plus de modération, et il ne se livra à la triste volupté de la masturbation qu'à de longs intervalles et lorsqu'il y était excité par des désirs très-violents. Cette attention fit que son tempérament n'en fut point du tout altéré; il demeura robuste, et ses facultés morales conservèrent toute leur énergie. Mais l'affreuse habitude qu'il avait contractée empêcha de se développer en lui le moindre germe du penchant qui attire un sexe vers l'autre. Il était parvenu à trente ans, et ses sens n'avaient jamais été émus par la vue d'une femme ; ils n'étaient vivement provoqués que par de vaines images ou des fantômes que lui créait son imagination déréglée. Il avait de bonne heure étudié le dessin, et il s'en était toujours occupé avec ardeur. La beauté des formes de l'homme, dans ce beau idéal des peintres, que la nature n'a jamais réalisé, le frappa et finit par lui inspirer une émotion extraordinaire, une passion vague et bizarre, dont il disait lui-même ne pouvoir se rendre compte et sur laquelle il répugnait à s'appesantir : il est nécessaire, néanmoins, d'avertir que cette passion n'avait aucun rapport avec les goûts des sodomistes, et qu'elle ne pouvait être provoquée par l'aspect d'aucun homme vivant. Telle était la situation aussi étrange qu'accablante dans laquelle se trouvait cet individu, lorsqu'il réclama mes conseils. Il n'offrait alors, je le répète, à l'extérieur aucun symptôme physique d'impuissance. Il était sain et bien constitué, et n'avait point été, à cet égard, maltraité par la nature ; mais il avait tellement interverti l'usage de ses dons, qu'il ne connaissait plus les moyens de les ramener à leur véritable but. Le malade, d'ailleurs, connaissait et sentait vivement son état : « Il n'est aucun effort, m'écrivait-il, » que je ne fusse prêt à faire pour sortir de mon ignominieuse » situation, pour arracher de ma pensée les infâmes images » qui viennent l'assaillir malgré moi ; elles m'ont privé jus- » qu'ici des jouissances légitimes que procure l'union des » deux sexes, et de la faculté dont jouissent les plus vils ani- » maux, de reproduire leur espèce. Je me meurs de chagrin » et de honte. »

« Pour ce qui me concerne, poursuit Alibert, je ne vis dans cette maladie qu'une perversion de l'appétit vénérien, et je pensai que l'indication la plus urgente était de replacer dans son vrai type la nature dérayée. En effet, l'individu était très-robuste à l'époque où il me consultait. Depuis longtemps il ne s'était livré qu'avec une extrême réserve aux plaisirs solitaires, surtout depuis la lecture de l'*Onanisme* de Tissot; d'ailleurs, comme je l'ai dit, la beauté des formes idéales de l'homme excitait en lui des sensations voluptueuses à l'approche desquelles les organes de la génération s'érigeaient et éjaculaient, ce qui devait faire présumer un état réel d'énergie dans les forces radicales de son économie. Il n'y avait donc ni destruction, ni altération essentielle dans la sensibilité physique, mais plutôt fausse direction de cette faculté de l'organisme : voici en conséquence le traitement que je proposai. J'ai déjà dit que l'individu dont il s'agit aimait passionnément le dessin, et qu'il s'appliquait à ce genre d'occupation avec cette ardeur dévorante qui distingue les grands peintres et qui est le plus sûr garant du succès; j'exigeai de lui qu'il fît une étude approfondie des formes du sexe féminin pour les reproduire par son talent. Il lui en coûta sans doute pour rompre la chaîne de ses habitudes, et de renoncer à l'Apollon du Belvéder pour la Vénus de Médicis. Mais peu à peu la nature, plus forte que tous les penchants factices, reprit ses droits. Dès qu'il fut parvenu à préférer des bras faibles, mais gracieux, à des bras musculeux et redoutables, dès qu'il se plut à contempler l'élégance des formes et la mollesse des contours, alors sa guérison commença à s'opérer. Après s'être fait un modèle imaginaire, il le chercha dans le monde physique. Il fallut du temps, de la persévérance; mais il se rétablit entièrement (1). »

L'exemple que je viens de rapporter, d'après Alibert, est sans contredit un des plus remarquables que je connaisse en ce genre; il me dispense de tout développement et prouve que le traitement de l'impuissance par perversion du *concessus* intime doit être surtout un traitement moral, car, je le répète, l'excitabilité physique n'est jamais malade dans ce cas, ou du moins elle n'est pervertie que secondairement à la perversion de l'excitabilité morale.

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(1) Alibert, *Nouveaux éléments de thérapeutique et de matière médicale*, 2ᵉ édit., t. II, p. 556 et suiv.

En dehors des aberrations sensuelles qu'amène la perversion de cette excitabilité chez le masturbateur, le sodomiste, le pédéraste, etc., il est d'autres circonstances qui peuvent détourner momentanément et incomplétement le *consensus* du but qu'il doit poursuivre; ici l'érection n'est pas entièrement rebelle à ses excitants naturels: mais tantôt, après s'être produite plus ou moins parfaitement, elle tombe à la porte même du sanctuaire féminin, après quelques instants à peine de durée; tantôt au contraire, elle se soutient assez longtemps dans le vagin même, et disparaît, comme chez ces présomptueux qui veulent montrer coup sur coup une valeur qu'ils n'ont pas, au moment même où ils croient toucher au but; dans tous les cas l'éjaculation n'a pas lieu et l'homme est frustré du plaisir qu'il se promettait. Un malade à qui j'ai donné des soins, pour ne pas perdre le fruit de son érection et peut-être plus encore pour sauver son honneur, m'a avoué que, sous prétexte d'attouchements préparatoires au coït, il se faisait masturber par sa maîtresse, et obtenait ainsi une éjaculation impossible pendant l'accouplement, et qui le dispensait *honorablement* d'un acte qu'il se sentait inhabile à accomplir.

D'autres fois un coït commencé dans toutes les conditions physiologiques ne peut se terminer que par un effort de l'imagination qui, se détournant de son but, va chercher un supplément d'excitation dans le spectacle de formes imaginaires ou dans le souvenir de pratiques honteuses.

Presque toujours la cause de cette perversion incomplète se trouve dans l'usage plus ou moins répété de certains moyens préparatoires au coït et inventés par un raffinement de débauche. Tandis que les manœuvres du masturbateur, du pédéraste et du sodomiste amènent une perversion complète, parce que le but est en dehors des lois de la nature, les circonstances auxquelles je ne puis faire qu'allusion n'entraînent qu'une perversion incomplète, parce qu'elles ne sont, pour ainsi dire, que l'exagération des excitants naturels, et que le but définitif est toujours le coït, malgré cette exagération, malgré le raffinement et quelquefois même malgré la folie des moyens que suggèrent la lubricité et la débauche.

Mais pour n'être qu'incomplète, la perversion sensuelle du débauché n'en est pas moins difficile à surmonter que la perversion complète du masturbateur, du pédéraste et du sodomiste. — Il faut avant toutes choses et presque exclusivement arracher les uns et les autres à leurs vices odieux et les faire rentrer dans la règle commune, car, dans toutes ces circonstances, l'impuissance, c'est-à-dire l'*impossibilité du coït physiologique*, a sa source, non dans une incapacité physique, mais dans une aberration de l'excitabilité morale.

Les éléments de la thérapeutique se trouveront donc dans les considérations de l'ordre le plus élevé; et le médecin sera bien souvent obligé de faire appel, selon l'occurrence, aux croyances religieuses, aux idées de morale, aux sentiments d'honneur et de famille, en un mot aux facultés morales, intellectuelles et affectives de son malade.

Quelquefois, comme chez le masturbateur et le débauché, il faut recourir à l'intimidation et étaler les maux et la honte qui sûrement attendent ceux qui transgressent les lois de la nature.

Enfin il est quelquefois nécessaire de faire quitter au malade le milieu dans lequel il trouve les excitants de sa sensualité pervertie, et dans ce cas il faut ordonner des voyages, le séjour à la campagne, et en même temps des occupations qui fatiguent le corps et distraient l'imagination.

Mais, je le répète, un bon résultat n'est obtenu qu'au prix de beaucoup de tact, de ménagements et surtout d'une persévérance à toute épreuve.

2° PERVERSION PHYSIQUE. — Depuis que l'auteur de l'article SATYRIASIS du *Dictionnaire des sciences médicales* a établi les signes différentiels du priapisme, du satyriasis et de l'érotomanie, on est généralement d'accord pour classer et nommer de la manière suivante les déviations de la fonction génésiaque : *priapisme*, érection sans désirs vénériens; *érotomanie*, désirs amoureux sans érection ; enfin *satyriasis*, érections continuelles, désirs immodérés du coït et délire érotique.

Cependant ce cadre n'est pas complet, et l'on est étonné de ne pas y voir figurer une maladie que j'ai observée plusieurs fois, et dont l'existence, empêchant le coït tel que je l'ai caractérisé pour l'homme, c'est-à-dire érection de la verge, copulation, plaisir et éjaculation, constitue une espèce d'impuissance qui doit, de toute nécessité, trouver ici sa place.

Cette maladie se traduit surtout par l'impossibilité de l'éjaculation séminale, non comme dans le priapisme, mais avec des érections normales et des désirs vénériens ordinaires.

Je donne le nom d'*aspermatisme* à cette sorte d'anaphrodisie (1).

Au premier abord, on s'étonnera de voir entrer cette infirmité dans le cadre de l'impuissance, alors que sa place paraît être naturellement marquée dans celui de la stérilité.

Sans doute, si je ne m'étais appuyé que sur des déductions théoriques, j'aurais suivi cette voie et je n'aurais pas reculé les limites déjà si étendues de l'anaphrodisie; mais les faits que j'ai soigneusement interrogés et étudiés m'ont imposé la marche que j'adopte, et j'espère prouver tout à l'heure que cette marche est, en effet, la seule vraie et la seule scientifique.

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(1) Je suis heureux de constater que l'affection que j'avais le premier décrite a été, depuis la première édition de ce livre, observée plusieurs fois tant en France qu'à l'étranger et que la science a adopté la dénomination que je lui avais imposée.

Mais d'abord il me faut examiner cette forme d'impuissance par perversion physique, dans laquelle manquent tout à la fois l'excitation morale, l'éjaculation et le plaisir.

1° PRIAPISME. — L'érection de la verge, dans le priapisme, peut être comparée aux mouvements qu'exécutent les membres de la grenouille dans l'expérience de Galvani; c'est un corps sans âme, que l'on me passe l'expression, obéissant à des causes anormales et étrangères.

Ces causes sont fort diverses : tantôt on les trouve dans l'emploi de certains agents, comme les cantharides; tantôt on les explique par l'existence de certains états pathologiques dont le priapisme est alors un symptôme ou une complication, comme la blennorrhagie, le calcul vésical, les maladies herpétiques, l'hypochondrie, l'épilepsie, le tétanos, etc.; tantôt elles se rencontrent dans l'usage d'aliments irritants, de boissons alcooliques; tantôt elles découlent de certaines habitudes, comme le coucher sur le dos et dans un lit trop chaud; ou enfin de certains accidents, comme une chute sur le coccyx, etc., sans parler, comme étranger à mon sujet, du priapisme si connu des pendus.

Quelquefois le priapisme ne reconnaît aucune de ces causes et constitue alors une maladie essentielle; dans ce cas, des conditions le favorisent, et parmi elles je citerai : le tempérament sanguin, avec prédominance du système hépatique; l'âge adulte et même la vieillesse; les saisons et les climats chauds, quoique Zacutus Lusitanus rapporte l'exemple d'un priapisme occasionné par un froid extrême; les excitants génésiaques de toutes sortes, tels que spectacles licencieux, lectures obscènes, danses voluptueuses, tableaux lascifs, etc., alors que l'excitation produite n'est pas satisfaite.

Mais de toutes les causes déterminantes ou occasionnelles du priapisme, nulle n'est aussi frequente et aussi active que l'usage des cantharides à l'intérieur et même leur emploi à l'extérieur.

Et il en doit être ainsi, car le priapisme est constitué par la congestion des corps caverneux, amenée par une cause entièrement physique, en dehors des excitants génésiaques, et entretenue par la contraction spasmodique des muscles ischio- et bulbo-caverneux. Le mécanisme de la congestion dans le priapisme est le même que celui de l'érection normale; seulement le premier est sous la dépendance d'une cause physique, tandis que le second n'obéit qu'à l'excitabilité morale.

A son début, et quand il n'a pas encore atteint un certain degré d'acuité, le priapisme n'est ordinairement pas douloureux; il fatigue tout au plus le malade et cède le plus souvent à l'action de quelques lotions froides.

Mais lorsque l'affection devient plus intense, soit que cette intensité arrive par degrés, soit qu'elle se montre tout à coup, des symptômes d'excitation générale et d'excitation locale se manifestent; une sorte de mouvement fébrile se fait sentir; la soif s'allume, la tête devient douloureuse et le délire même peut surgir; une anxiété pénible fatigue le malade qui cherche en vain le repos et le sommeil.

Du côté des organes génitaux, la tension de la verge se communique au pubis et au périnée, qui participent souvent à la gangrène qui attaque le membre viril. Quelquefois une éjaculation spermatique se produit, mais cette déplétion, loin de calmer le priapisme, irrite davantage encore la muqueuse de l'urèthre dont la sensibilité est extrême; il n'est pas rare alors d'observer une hémorrhagie uréthrale. Tout le monde connaît le fait, rapporté par Cabanis, de cet étudiant en médecine qui, dans un violent accès de jalousie, fut pris, durant plusieurs heures, d'un priapisme très-douloureux, pendant lequel se produisaient tour à tour des émissions de semence et des pertes de sang presque pur.

Un état aussi grave ne peut se prolonger longtemps sans danger, surtout si la cause du priapisme se trouve dans l'usage des cantharides ; presque toujours alors la maladie se complique d'une cystite ou d'une entérite très-souvent mortelles ; même en l'absence de pareilles circonstances, le priapisme peut se terminer par la mort.

Quelquefois la perte de l'organe génital seul est la conséquence de cet état pathologique, et, dans ce cas, le priapisme est le point de départ d'une impuissance absolue et contre laquelle la médecine est entièrement désarmée.

Il est donc de la plus haute importance de prévenir de semblables résultats et de s'opposer par tous les moyens possibles, soit à la mort du malade, soit à la perte de son organe copulateur.

Quand le priapisme arrive graduellement, c'est-à-dire quand les érections deviennent peu à peu plus fréquentes, et cèdent, soit à un changement de température, soit à des lotions froides, on n'a le plus souvent besoin que d'un régime alimentaire approprié, dont les aliments doux, les légumes herbacées et le lait font la base, ainsi que les boissons rafraîchissantes ou acidules, prises à une basse température. Le lit du malade ne sera ni trop mou ni trop chaud, et le patient aura soin de ne pas coucher sur le dos.

Les bains généraux ou les bains de siége à une température de 16, 18 et 20 degrés, l'air pur de la campagne, les distractions en plein air, l'éloignement des excitants vénériens seront prescrits comme hygiène.

La thérapeutique, dans ces cas peu graves, se réduit à quelques émulsions ou juleps camphrés et à des lavements froids ou émollients, ou dans la composition desquels entre une faible dose de camphre dissous dans un jaune d'œuf. On retire des avantages marqués de l'usage des bromures alcalins (de potassium, de lithium, de sodium, etc.), de 1 à 5 gram.

par jour, et de celui du lupulin (*partie active du houblon*) à la dose progressive de 1 à 10 grammes en nature, en teinture et surtout en saccharure. Les opiacés et la ciguë peuvent être essayés, mais avec modération dans leur emploi et leur dose, dans la crainte d'augmenter les accidents qu'il s'agit de combattre.

Quand le priapisme se présente avec des caractères plus graves, c'est-à-dire lorsque les érections sont persistantes, douloureuses, et qu'il y a menace de gangrène, il ne faut pas hésiter à pratiquer une saignée, si la constitution du malade le permet, ou à appliquer des sangsues aux lombes. Le malade sera tenu longtemps dans un bain, et l'on placera sur les organes génitaux des cataplasmes émollients arrosés de laudanum. Dans un cas grave de priapisme, où les accidents les plus terribles étaient à craindre, après avoir vainement employé les saignées, les bains, les préparations camphrées et narcotiques, les lavements émollients et antispasmodiques, je me décidai à pratiquer des mouchetures sur les corps caverneux de la verge; la déplétion sanguine qui en résulta amena un ramollissement de l'organe et prévint ainsi la gangrène, qui, sans cette circonstance heureuse, eût peut-être été hâtée par les mouchetures mêmes. Je suis loin d'ériger cette opération en principe, mais je crois qu'on en doit user comme ressource extrême, lorsque tous les autres moyens ont échoué et lorsqu'il n'existe encore aucun symptôme de sphacèle.

D'ailleurs le traitement du priapisme est toujours subordonné à la cause qui l'a produit. S'il tient à une affection dartreuse, s'il reconnaît pour cause un calcul dans la vessie, l'usage des cantharides, etc., on s'attache à détruire cette cause par les moyens que la médecine et la chirurgie mettent à la disposition du praticien, et dont je n'ai pas à m'occuper ici.

2° Aspermatisme. — L'aspermatisme est caractérisé par l'impossibilité de l'éjaculation avec une érection normale, contrairement au priapisme, et sans perversion ni exaltation des facultés morales, contrairement à l'érotomanie.

Je dois, ainsi que je m'y suis engagé plus haut, légitimer la place que je donne ici à ce nouveau genre d'impuissance, car si l'émission de la semence n'est pas la source de la volupté amoureuse, l'aspermatisme doit être mis parmi les causes de la stérilité et non de l'impuissance.

Je vais d'abord rapporter l'observation qui, la première, éveilla dans mon esprit les considérations physiologiques qui me font rattacher la jouissance vénérienne à l'éjaculation de la liqueur séminale.

Un jeune homme de vingt ans, d'une santé parfaite et d'un tempérament sanguin, se présente un jour à ma consultation et me raconte les faits suivants : « J'entre facilement en érection, me dit-il ; mes désirs vénériens sont d'autant plus vifs que je n'ai *jamais éprouvé les jouissances de l'amour ;* l'intromission de la verge dans les organes de la femme se fait sans difficulté et sans douleur ; mais cette intromission obtenue, je ne puis, quelque effort que je fasse, ressentir la volupté dont mes amis m'ont parlé ; après un temps plus ou moins long de tentatives infructueuses, pendant lesquelles j'appelle à mon aide toutes les ressources de mon imagination et toute mon énergie amoureuse, je ploie sous la fatigue, et ma verge, participant à cet abattement de tout mon être, s'affaisse et devient molle, sans qu'il m'ait été possible d'obtenir l'éjaculation. » (1)

Dans l'interrogatoire que je fis subir au malade d'après cette première donnée, je recueillis les renseignements suivants : l'éjaculation ne s'était jamais produite à l'état de veille, soit par la masturbation, soit par le coït ; mais elle avait lieu quelquefois pendant le sommeil, tantôt sous l'influence de rêves lascifs, tantôt sans cause connue ; et, ce que ces circonstances étranges présentent de remarquable, c'est que si le malade venait, par un motif ou par un autre, à s'éveiller pendant l'éjaculation, celle-ci s'interrompait instantanément, de telle sorte que le malheureux n'avait pas même une idée confuse du plaisir vénérien.

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(1) Depuis la publication de ce fait, dans la première édition de ce livre, un certain nombre d'observations semblables a été recueilli ; je pourrais en reproduire quelques-unes ; mais je préfère ne rien changer à l'article qui a introduit dans la science la description et le nom d'une affection jusqu'alors passée inaperçue.

Ce qu'il éprouvait aux approches de la femme était un sentiment de bien-être, une excitation générale qui n'était pas sans charmes, il est vrai, mais qui n'était pas la jouissance génésique ; tous les hommes aussi éprouvent ce bien-être et cette excitation générale, et s'ils les considèrent comme les doux préludes du plaisir, ils ne les estiment pas comme le plaisir lui-même, et nul ne croirait avoir goûté les voluptés de l'amour, si ces voluptés se réduisaient à ce bien-être et à cette excitation préparatoire.

Cependant, quelques physiologistes, abusant de la langue et de la logique, ont avancé que l'éjaculation séminale n'était pas le plaisir, mais le *signal de la fin du plaisir ;* et à cet effet ils citent l'exemple des enfants masturbateurs qui éprouvent du plaisir sans éjaculation. La définition et l'exemple qui l'appuie sont aussi mauvais l'un que l'autre : la définition est aussi irréprochable que si l'on disait de la vie qu'elle est le signal de la mort ; quant à l'exemple, il est fort douteux que l'enfant, dans l'onanisme, éprouve le même plaisir que l'homme pendant l'éjaculation, et il est probable que la volupté du premier se réduit à une simple excitation générale et locale.

Non, l'éjaculation spermatique n'est pas plus le signal de la fin du plaisir que la vie n'est le signal de la mort. Sans doute, en n'ayant égard qu'aux destinées de ce monde, toute chose, par cela même qu'elle est, doit avoir un terme, de telle sorte que son existence est la preuve même et le signal de sa destruction. Mais ce caractère, inhérent à toute réalité, ne peut servir de signe distinctif à aucune, pas plus à l'éjaculation qu'à l'érection qui, à ce point de vue, pourrait être définie le signal de la fin de l'orgasme vénérien ; ce qui serait absurde.

L'éjaculation, lorsqu'elle s'accomplit dans les conditions normales, dans les conditions voulues par la nature, c'est-à dire par saccades, pendant l'érection de la verge, et après une excitation amoureuse suffisante, n'est peut-être pas le plaisir unique de la copulation, mais elle en constitue, du moins, l'expression la plus haute et la plus vive. Par conséquent, le défaut de l'émission spermatique, en rendant le coït incomplet, crée un genre d'impuissance dont on n'avait jusqu'ici tenu aucun compte, et pour la désignation duquel je me suis vu forcé d'employer le mot nouveau d'*aspermatisme*.

Cependant, des faits à peu près analogues à celui que j'ai mentionné plus haut sont consignés dans la science. Une observation fort curieuse de ce genre est rapportée par Cockburn (1) : « Un noble Vénitien, dit ce dernier auteur, épousa à l'âge où l'amour favorise un homme avec complaisance, une jeune demoiselle très-aimable, avec laquelle il se comporta assez vigoureusement ; mais l'essentiel manquait à son bonheur : tout annonçait dans ses transports le moment de l'extase, et le plaisir qu'il croyait goûter s'échappait. L'illusion lui était plus favorable que la réalité, puisque les songes qui succédaient à ses efforts impuissants le réveillaient par des sensations délicieuses, dont les suites n'étaient pas équivoques sur sa capacité. Cet époux malheureux, rassuré sur son état, voulait-il prouver efficacement sa puissance et réaliser ses plaisirs ? il en procurait sans pouvoir les partager ; en un mot, l'érection la plus forte n'était pas accompagnée de ce jaillissement précieux qui fait connaître toute l'étendue de la volupté. On fit inutilement plusieurs remèdes pour procurer des plaisirs à un homme qui méritait de les connaître et que son amour consumait depuis assez longtemps. On pria enfin les ambassadeurs, que la république de Venise entretient dans les différentes cours de l'Europe, de vouloir bien consulter les plus fameux médecins des lieux où ils faisaient leur résidence, sur la cause de cette incommodité, aussi bien que sur les moyens dont il fallait se servir pour y remédier. J'attribuai cette impuissance, dit le docteur Cockburn, à la trop grande vigueur de l'érection, qui bouchait le conduit de l'urèthre avec tant de force (1) qu'elle ne pouvait être surmontée par les moyens qui obligent la semence à sortir des vésicules séminales ; au lieu que cette pression étant moins forte dans les songes, l'évacuation se fait avec plus de liberté. »

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(1) *Essais et observations de médecine d'Édimbourg*. Paris, 1740, t. I, p. 394. — De Lignac, *De l'homme et de la femme*, t. I, p. 282 et suiv. Lille, Henry, 1774.

La *Gazette de santé*, dans son n° 52, rapporte une observation à peu près semblable, d'après Schevetel ; enfin Planque fait mention d'un homme de trente-huit ans, qui se plaignait d'être impuissant, parce que la semence ne pouvait point sortir, quoiqu'il fût souvent en érection. Il passa ainsi une année à se tourmenter, et la nature se fit un chemin à la région épigastrique du côté droit. La semence passait par trois petits trous, quand cet homme exprimait cette partie ; mais il mourut peu après de consomption (2). »

Je ne m'arrête pas, on le comprend, à cette prétendue fistule séminale; l'erreur est trop grossière pour mériter d'être discutée.

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(1) Cette explication n'est plus admissible, car on sait au contraire aujourd'hui que l'érection dilate le canal de l'urèthre. Il serait plus rationnel d'attribuer cette impossibilité d'éjaculation aux contractions spasmodiques des conduits éjaculateurs.

(2) *Bibliothèque choisie de médecine*, t. VI, art. IMPUISSANCE.

Comme on le voit, les faits semblables à celui qui s'est offert à mon observation et que j'ai rapporté, sans être très-communs dans les annales de la science, étaient suffisants cependant pour attirer l'attention des praticiens, et l'on s'étonne que l'on ait jusqu'ici confondu ce genre d'impuissance avec celui que justifie le priapisme ou que caractérise la non-érection de la verge.

Presque toujours, l'aspermatisme tient à un état spasmodique des conduits éjaculateurs ou de l'urèthre; et cette cause doit être acceptée comme la seule vraie dans les cas où, comme chez mon malade et chez le Vénitien dont parle Cockburn, des pollutions ont lieu pendant le sommeil; cette circonstance, qui jeta une si vive lumière dans l'esprit du médecin écossais, ne doit jamais être perdue de vue par le praticien.

L'absence de l'éjaculation peut également tenir à l'oblitération des conduits éjaculateurs, que cette oblitération soit native ou le résultat d'un état morbide. Dans ce cas, aucune émission de sperme n'a lieu, ni pendant le sommeil ni pendant la veille, ainsi que je le dirai plus loin, quand je parlerai de cette cause de stérilité.

L'oblitération des conduits éjaculateurs est une affection rare; elle est ordinairement produite par la matière tuberculeuse ou cancéreuse dont le dépôt peut être limité à ces conduits, mais qui, le plus souvent, se rencontre aussi dans les vésicules séminales et les canaux déférents. Comme on doit le comprendre, ces altérations constituent des infirmités presque toujours au-dessus des ressources de l'art.

Mais il n'en est pas de même de l'état spasmodique des conduits éjaculateurs et de l'urèthre; abandonnée à elle-même, cette névrose pourrait disparaître avec l'âge, c'est-à-dire avec la diminution des désirs et de l'orgasme vénérien; mais il est peu de malades qui consentent à attendre une pareille terminaison, et tous, on le comprend sans peine, réclament impérieusement le secours de la médecine.

Quand le sujet est jeune et vigoureux et qu'il n'existe pas chez lui de contre-indications, il faut commencer le traitement par une émission sanguine avec la lancette, ou tout au moins par des sangsues au périnée. La saignée, quand elle est possible, doit être préférée, comme agissant mieux sur l'ensemble de l'innervation, et parce qu'elle laisse libre une place sur laquelle on a à agir, soit par des frictions ou des onctions, soit par des vésicatoires volants, ainsi que je vais le dire.

Après cette émission sanguine, on essaye tour à tour, au commencement, les narcotiques et les antispasmodiques, tant à l'intérieur qu'à l'extérieur.

A l'intérieur, j'ai retiré, dans le cas que j'ai cité, des avantages réels des pilules suivantes :

Asa fœtida	aa 1 gram.
Castoréum	
Extrait gommeux d'opium......	aa 50 centigr.
Extrait de ciguë..............	
Conserve de roses.............	q. s.

On fait avec cette préparation de 15 à 20 pilules, et le malade en prend quatre par jour.

A l'extérieur, des frictions sur le périnée et les lombes avec les opiacés, la ciguë, la belladone, sont prescrites avec succès.

Les mêmes agents et les antispasmodiques, l'asa fœtida surtout, peuvent être ordonnés en lavement.

Les bains généraux et les bains de siége doivent jouer un grand rôle dans la thérapeutique de l'aspermatisme ; leur température varie selon les indications spéciales, depuis 1 degré jusqu'à 30.

Chez les sujets lymphatiques, les bains de mer offrent des ressources inespérées, et dans bien des cas ils sont le seul remède au mal.

Ces moyens, secondés par un régime convenable et approprié au tempérament et à la constitution du malade, suffisent d'ordinaire pour triompher de la maladie ; il faut quelquefois en prolonger assez longtemps l'usage, et les associer à quelques précautions hygiéniques relatives au coucher, comme, par exemple, la proscription d'un lit trop chaud et trop mou, et d'un sommeil ou d'une paresse trop prolongés.

Enfin, dans les cas où les progrès vers la guérison ne sont ni assez rapides ni assez sensibles, on peut les hâter en employant les opiacés, par la méthode endermique. C'est ce que je fis, avec un plein succès, sur le malade dont j'ai parlé au début de cet article ; j'appliquai sur le périnée un vésicatoire *non cantharidé*, que je saupoudrai pendant trois jours, matin et soir, avec 4 milligrammes de chlorhydrate de morphine.

Depuis la publication de cet article que j'ai conservé tel qu'il a paru dans la première édition de ce livre, la thérapeutique de l'aspermatisme s'est enrichie de ressources que je dois faire connaître ici.

En premier lieu la méthode endermique pour l'usage de la morphine, est heureusement remplacée par l'injection sous-cutanée avec la seringue de Pravaz ; et en second lieu les stupéfiants sont avec avantage suppléés par les sédatifs, tels que les bromures et quelquefois l'hydrate de chloral. Le bromure de potassium et surtout le sirop Collas au bromure double de potassium et de lithium m'ont rendu des services dans beaucoup de circonstances.

PERVERSION MORALE ET PHYSIQUE : SATYRIASIS. — Je me dois contenter en cette place de mentionner le satyriasis, car ce serait étrangement abuser des ressources de la classification, si dans un livre consacré à l'impuissance, je décrivais le type de la luxure et l'idéal de la lubricité.

Sans doute, on conçoit que le satyriasis puisse devenir une cause d'impuissance, et que les exploits amoureux qu'il suscite soient suivis de tristes revers; mais alors sa place est marquée dans un autre cadre, dans celui où il sera question de l'impuissance consécutive. D'ailleurs, le satyriasis, excessivement rare, surtout dans les pays froids et les régions tempérées, est moins une cause d'impuissance que de mort, ainsi que le prouvent les quelques observations que la science possède. Je suis donc autorisé à ne pas faire entrer dans les limites de cet ouvrage une affection que tant de motifs en éloignent.

CHAPITRE III

IMPUISSANCE SYMPTOMATIQUE

S'il me fallait rapporter toutes les maladies qui s'accompagnent de la suspension des fonctions génitales, il me faudrait passer en revue le cadre presque tout entier de la pathologie; il n'est pas en effet une affection aiguë qui ne suspende ou les désirs vénériens ou la puissance érectile.

Mais qu'a à faire l'impuissance dans une fièvre typhoïde, dans une pneumonie, dans une fracture, etc., etc? Ne serait-ce pas tomber dans une exagération ridicule que d'étudier un pareil symptôme parmi ceux qui compromettent si gravement la vie du malade, et de penser à la propagation de l'espèce, alors qu'il s'agit de conserver le propagateur lui-même?

Évidemment une pareille prétention ne peut entrer ni dans mon esprit ni dans le cadre de ce livre.

L'impuissance, en tant que symptôme, suppose l'exercice de la vie de relation et exclut toute menace de mort prochaine; tantôt elle coïncidera avec une maladie véritable, et en sera un des principaux caractères, comme par exemple le diabète, les pertes séminales, etc., etc.; tantôt au contraire elle ne marchera avec aucune altération locale ou générale, et sera simplement alors l'attribut d'un état physiologique, comme l'âge, la constitution, etc., etc.

Le cercle que j'ai à parcourir dans ce chapitre se trouve donc naturellement partagé en deux parties bien distinctes :

1° Impuissance symptomatique de certains états physiologiques;

2° Impuissance symptomatique de certains états pathologiques dont la chronicité et la longue durée ne suspendent pas la vie de relation du malade.

C'est dans cet ordre que j'examinerai le sujet de ce chapitre.

1° IMPUISSANCE SYMPTOMATIQUE DE CERTAINS ÉTATS PHYSIOLOGIQUES.

§ I. — Ages.

Je ne puis faire ici que de l'hygiène, de l'hygiène spéciale, si l'on veut, mais rien que de l'hygiène, car il n'est permis à personne, au médecin moins qu'à tout autre, de transgresser les lois de la nature et d'établir des préceptes en dehors de la volonté qui régit notre organisation et règle les phases de notre vie.

L'exercice de la fonction génitale n'a lieu qu'à l'époque de la plus grande activité organique, après l'entier développement de l'individu et avant sa décadence. Les deux phases extrêmes de la vie humaine sont donc marquées par le repos des organes de la génération.

Il est impossible de déterminer d'une manière générale les âges précis auxquels la puissance génitale apparaît et s'éteint; il est, sous ce rapport, des prédispositions tenant aux causes les plus diverses, telles que le climat, le tempérament, l'état de maladie ou de santé, l'éducation, les habitudes, etc., etc., prédispositions qui donnent à chaque individu sa physionomie et son caractère, et par l'influence desquelles les organes génitaux ont en quelque sorte leurs lois propres d'évolution et de dépérissement.

Si la fonction génératrice n'était dominée que par des causes générales, indépendantes de nous, comme le climat, la constitution et *jusqu'à un certain point* le tempérament, etc., on pourrait préciser d'une manière assez exacte les époques diverses du cercle qu'elle parcourt; malheureusement il n'en est point ainsi, et les modifications les plus profondes que subit son action lui viennent de circonstances changeantes et variables comme chaque individu.

On a dit depuis longtemps qu'il n'existait pas deux êtres humains parfaitement semblables; cette proposition, dont je n'ai pas à discuter la vérité d'une manière générale, est inattaquable, appliquée au sujet qui nous occupe. Sous ce rapport, chacun est son modèle, chacun reste lui, et, plus qu'en toute autre circonstance, on doit recommander ici le *connais-toi toi-même* du philosophe grec.

Aussi, adolescents et vieillards, vous que poussent vers des voluptés défendues et par conséquent pleines de dangers et d'amertume, soit de vagues aspirations vers des délices encore inconnues, soit le souvenir ou le regret de la perte d'un bien pour toujours irréparable, ne regardez jamais autour de vous, ne mettez pas votre ambition à suivre les traces de votre voisin : la mesure de vos forces est en vous et non ailleurs.

Certes les exemples de précocité et de longévité amoureuses ne manquent pas : sous ce rapport, et pour ne parler ici que de notre sexe, saint Jérôme assure qu'un enfant de dix ans fit goûter les plaisirs amoureux à une nourrice avec laquelle il couchait, et qu'il finit par la rendre enceinte; Planque rapporte l'histoire de deux enfants qui, à l'âge de quatre ans, avaient les organes génitaux si développés qu'ils pouvaient accomplir l'acte vénérien (1). L'ancien *Journal de médecine* renferme plusieurs observations de ce genre, et entre autres celle qui fut communiquée par Fagès de Cazelles, et dans laquelle il est dit qu'au mois de juillet 1753, il naquit à Cahors un enfant que l'on put croire en pleine puberté dès l'âge de quatre ans. Les organes de la génération avaient le volume et *exactement* la forme extérieure qu'ils présentent chez un homme de trente ans *bien conformé;* il montrait en même temps un penchant bien décidé pour le sexe, et il aimait, selon les expressions de l'auteur, à se trouver avec les filles *nubiles*, auprès desquelles il manifestait les désirs les plus passionnés. M. le docteur Ruelle (de Cambrai) a observé un fait de puberté non moins précoce sur un petit garçon de trois ans et quatre mois (2).

Les exemples de vieillards dont les forces génitales se conservèrent jusque dans un âge avancé sont encore plus nombreux que ceux d'enfants à virilité précoce. Massinissa, roi de Numidie, engendra Methynnate, au dire de Valère Maxime, après 86 ans; Wadislas, roi de Pologne, eut deux garçons à l'âge de 90 ans; enfin tout le monde connaît l'histoire du célèbre Anglais Thomas Parr, qui, à l'âge de cent ans, faisait partager à sa femme, qui en fit l'aveu, toutes les voluptés de la couche conjugale.

Sans doute, les exemples que je viens de rapporter et dont j'aurais pu sans peine augmenter le nombre, constituent des exceptions qu'il est bien rarement permis d'imiter, et prouvent qu'en cette matière il n'y a qu'une différence de plus ou de moins.

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(1) *Bibliothèque choisie de médecine*, t I, art. ACCROISSEMENT.

(2) Ruelle, *Bulletin de l'Académie de médecine*. Paris, 1843, t. VIII, p. 622.

Et cela est si vrai que l'on rencontre tous les jours des hommes dans toute la force de l'âge, de 30 à 35 ans, par exemple, plus vieux, plus décrépits, au point de vue de la fonction copulatrice, que certains hommes de 65 à 70 ans; et, parce que celui-ci montrera encore quelque valeur conjugale, le premier devra-t-il tourmenter ses organes fatigués ou usés avant l'âge? Non, bien évidemment non, et la science, d'accord ici avec la sagesse, lui prescrira de régler l'exercice de la fonction copulatrice d'après les forces qui lui restent et les désirs qui l'animent.

Jeunes et vieux imprudents qui voulez courir après des voluptés qui vous fuient, ne demandez ni au libertinage, ni à la médecine une énergie factice et toujours funeste; chaque âge a ses plaisirs, le vôtre ne doit point connaître ceux de l'amour; vous que sollicitent les charmes d'un monde encore inconnu, résistez à ces tentations étranges et nouvelles, et sachez être enfants; la vie s'offrira à vous avec tous ses sourires, et les organes que vous aurez ménagés vous procureront plus tard des voluptés complètes et sans amertume; et vous dont l'imagination a dû se réfugier dans la mémoire, éloignez de votre esprit les souvenirs trop doux et les regrets trop amers; sachez être vieux (1); La Rochefoucault avance que la maxime est difficile à suivre; mais pour adoucir et faciliter votre obéissance à cette loi fatale de notre être, songez que la récompense de votre sacrifice est la conservation et la prolongation de la vie, ce bien suprême, ce don magnifique de Dieu.

On a prétendu, en s'appuyant sur l'exemple du roi David, qu'il était possible de redonner au vieillard les forces perdues, en le faisant coucher avec des adultes sains et bien portants de l'un ou de l'autre sexe, et surtout du sexe féminin. A cet effet, Boerhaave raconte qu'un vieux bourgmestre d'Amsterdam, étant tombé dans un épuisement profond, coucha, d'après ses conseils, entre deux jeunes filles, belles et d'une bonne santé, et en retira un si grand avantage que, après quelque temps de ce traitement, la grossesse d'une des deux femmes l'avertit de suspendre la médication, afin de ne pas voir le remède devenir à son tour cause de la maladie. Le roi David, pour avoir été moins prudent, paya de sa vie l'usage trop répété du remède, quoique son historien ne l'accuse pas d'être sorti des bornes de la bienséance avec la belle Abisag.

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(1) Réveillé Parise, *Traité de la vieillesse*. Paris, 1853

Est-il besoin de rappeler les arguments avec lesquels les anciens auteurs soutenaient une pareille médication? La vie exhalée d'un côté et absorbée de l'autre ! Quelle étrange fontaine de Jouvence ! C'est la fable du vampire élevée à la hauteur de la science. N'est-il pas plus rationnel d'admettre que l'historien du roi David, voulant cacher les désordres de la vieillesse de celui que l'on appelait grand et saint entre tous, inventa cette explication physiologique que l'ignorance accepta d'abord et que la tradition consacra ensuite, sans que le *servum pecus* qui la recevait en héritage ait pris la peine d'en pénétrer le sens véritable. Abisag n'était pas autre chose pour le roi David qu'un médicament aphrodisiaque ; les deux jeunes filles dont parle Boerhaave répondaient à la même indication auprès du vieux bourgmestre d'Amsterdam.

Vieillards, fuyez cet aphrodisiaque comme les autres ; son action est peut-être plus terrible encore que celle dn phosphore ou du geng-seng ; n'étreignez pas dans vos bras, sous prétexte d'une absorption imaginaire, de jeunes filles saines et belles, car, plus actif que la robe de Déjanire, leur feu consumerait bientôt vos chairs et tarirait les sources de la vie.

§ II. — Constitution, tempérament.

Je n'entends parler ici ni des constitutions *pathologiques* c'est-à-dire *diathésiques*, ni des accidents *inoffensifs* qu'entraînent parfois certains tempéraments, comme l'obésité par exemple ; les unes et les autres trouveront ailleurs leur place ; — je ne dois, pour le moment, considérer que les constitutions et les tempéraments compatibles avec l'état de santé.

Qu'on me permette, en passant, de m'inscrire en faux contre les physiologistes qui ont fait de la santé un état type, auquel ils ont assigné des attributs immuables et des caractères imaginaires. Non, la santé n'est pas un état absolu ; c'est au contraire un état essentiellement variable, autant dans ses manifestations que dans ses conditions d'existence. Parce qu'un homme aura une moindre vitalité et présentera un développement moins considérable des instruments de la vie que le type ordinaire de ses semblables, devra-t-on en conclure que là n'existe pas la santé ? Évidemment non. La santé, je le répète, n'est point un être abstrait, absolu ; c'est un résultat, c'est le fruit du jeu normal et régulier des organes ; que cette action se produise avec une activité plus ou moins grande, la conséquence n'en sera pas modifiée. Quand un convoi de chemin de fer, qu'on me permette cette comparaison, est lancé sur une voie, que la vitesse soit grande ou petite, le convoi n'en suit pas moins la même direction ; il peut y avoir une différence de vitesse, mais la marche est toujours normale. Il en est de même de la santé : que la force vitale soit énergique ou languissante, pourvu que les organes ne soient point altérés, le résultat sera analogue, il n'y aura qu'une différence de plus ou de moins.

Ces considérations purement physiologiques ne sont pas aussi étrangères à mon sujet qu'elles semblent le paraître ;

car si la santé est compatible avec toutes les nuances de l'organisation harmonique, l'impuissance, état essentiellement pathologique, ne peut coexister avec aucune constitution et aucun tempérament tels que j'ai déclaré les devoir considérer dans ce paragraphe.

C'est ce que l'expérience prouve en effet.

Aussi je ne crains pas de poser en principe que, en dehors de tout état maladif, il n'existe aucune constitution et aucun tempérament capables de produire l'impuissance chez l'homme.

Qu'on n'accuse pas cette proposition d'être trop absolue, elle est l'expression exacte de la vérité ; si elle est contraire à ce que l'on trouve généralement dans les auteurs, je suis convaincu que ceux-ci sont tombés dans l'erreur pour n'avoir pas suffisamment séparé ce qui était santé et ce qui était maladie. Ne serait-ce pas s'exposer à une confusion étrange que de prétendre, par exemple, que l'hystérie, l'épilepsie, etc., sont des attributs d'une constitution délicate ou d'un tempérament nerveux ? Sans doute une constitution semblable et un tempérament pareil peuvent être des causes prédisposantes de ces affections, mais à coup sûr l'hystérie et l'épilepsie sont des états pathologiques parfaitement distincts et indépendants de toute constitution et de tout tempérament.

L'impuissance est dans le même cas : c'est une maladie et non un attribut ; et en cette qualité, elle reconnaît des causes déterminantes, occasionnelles et prédisposantes.

Parmi ces dernières, une constitution faible et un tempérament lymphatique occupent le premier rang, comme je l'ai dit plus haut (1), et l'on conçoit qu'il n'en peut être différemment, si l'on considère que c'est au milieu de ces conditions organiques que la vitalité est la moins grande et les forces plastiques les moins énergiques.

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(1) Voyez page 118.

De plus, et comme conséquence forcée de ces prémisses, sous l'empire de pareilles circonstances, les désirs vénériens sont paresseux et la puissance virile languissante.

De tous les faits nombreux de ce genre que j'ai vus, je ne citerai que l'observation d'un avoué de première instance du tribunal de la Seine, qui, jouissant d'une santé parfaite malgré un tempérament lymphatique *type*, ne s'abandonne aux rapprochements sexuels que tous les deux ou trois mois, avec une érection lente et difficile à se produire. Loin de se plaindre de cette apathie du sens génital, il s'en réjouit, au contraire, et se loue de ne pas subir le joug de passions qui l'entraveraient dans ses affaires et ses plaisirs de prédilection.

Évidemment cet homme, malgré la faiblesse de ses désirs et la difficulté de ses érections, n'est pas impuissant ; seulement la fonction génitale participe de la langueur qui frappe toutes les autres fonctions, et cette harmonie qui, sans nul doute, est le palladium de sa santé, serait à coup sûr rompue par des plaisirs vénériens plus vifs et une énergie génitale plus forte.

Pour conserver cette harmonie, si nécessaire au maintien de la santé, il faut bien se garder d'activer une fonction au détriment des autres ; aussi, dans les cas de cette nature, le médecin prudent et sage ne doit point céder aux sollicitations du malade qui, ne se préoccupant que de la faiblesse des organes génitaux, demande une médication excitante et purement locale.

Répondre à ce vœu imprudent serait non-seulement faire de la médecine pitoyable, mais encore s'exposer à jeter le trouble dans un organisme sain.

La modification à produire doit porter sur l'économie tout entière, et tenez pour assuré que l'activité génitale croîtra en proportion directe de l'énergie de la force plastique.

C'est ici que l'on obtiendra un véritable triomphe avec une hygiène bien ordonnée et secondée, comme médicaments, par le quinquina, les ferrugineux, l'hydrothérapie, le massage, les eaux minérales, etc. Un régime alimentaire fortifiant et tonique jouera nécessairement un grand rôle, à côté des exercices corporels en plein air et au soleil.

Les organes génitaux n'exigent pas ordinairement des soins spéciaux ; ils participent, comme les autres organes, au surcroît de vitalité que le traitement amène, et ce n'est que dans des cas assez rares qu'il est nécessaire d'agir directement sur eux. Dans les circonstances où il est utile d'éveiller et de surexciter le génésique endormi, en dehors du régime et du traitement fortifiants, il faut se garder de recourir à des excitants internes, afin de ne pas déterminer dans les premières voies une inflammation ou même un état d'irritation qui, en annihilant l'action digestive de l'estomac et des intestins, rendrait illusoires et impossibles les principales bases de la médication.

Ce sont les moyens externes et les moyens moraux que le praticien sage appellera à son aide.

Parmi les premiers, il aura à choisir entre les onctions, les fomentations et les frictions pratiquées sur le périnée, les lombes et la base de la verge, avec les substances aromatiques, ou avec les agents dont l'action est excitante. Les frictions et les douches sur la fin de la colonne vertébrale offriront une ressource précieuse, en appelant vers les régions du bassin un afflux plus considérable de sang. L'électricité, le magnétisme et l'acupuncture, sans être formellement contre-indiqués, seront d'un bien faible secours, car leur action, ainsi que je l'ai dit autre part, est essentiellement excitatrice.

Les moyens moraux doivent, dans cette médication directe, occuper une place importante. Les romans, les bals, les spectacles, tout ce qui parle à l'imagination, tout ce qui éveille les désirs, tout ce qui s'adresse au sens vénérien, devra être mis à contribution ; la société des femmes, de celles surtout dont les mœurs permettent certaines privautés et certaines libertés de langage, sera conseillée, dans les limites, bien entendu, de la décence et de l'honneur. Cette dernière condition est tout autant une maxime de morale qu'un précepte de médecine, car l'excès dans l'emploi de ces moyens moraux, loin de produire la salutaire excitation que l'on recherche, amène souvent, surtout chez les malades de cette espèce, le dégoût et l'aversion pour les pratiques amoureuses. Le médecin ne saurait donc être trop circonspect dans cette partie de la médication, et, avant de l'ordonner, il devra mesurer, en quelque sorte, l'énergie et la tendance des facultés intellectuelles de son malade.

2° IMPUISSANCE SYMPTOMATIQUE D'UN ÉTAT PATHOLOGIQUE.

§ I. — De la nutrition.

Comme en beaucoup de circonstances, dans la nutrition, au point de vue spécial qui nous occupe, les extrêmes se touchent. L'obésité et le marasme, en prenant ces mots comme expressions extrêmes de la différence en plus ou en moins de l'assimilation sur la déperdition, quoique présentant des caractères fort opposés, peuvent cependant tous les deux amener l'impuissance.

En raison de ce point de contact de leur histoire, ces deux affections trouvent à côté l'une de l'autre une place dans ce chapitre ; mais, eu égard à la dissemblance de leur physionomie, elles demandent à être séparées et à être étudiées isolément.

C'est ce que je vais faire en conservant, pour bien préciser ma pensée, les mots obésité et marasme.

Obésité. — Quand on songe au tissu graisseux dont les eunuques sont chargés, et à l'embonpoint qu'acquièrent les individus dont le génésique est paresseux ou s'est éteint avant l'âge, on se demande s'il ne conviendrait pas mieux de considérer l'obésité comme un signe de l'impuissance, au lieu d'en faire un état pathologique dont l'anaphrodisie est un symptôme.

Sans doute, cette manière de voir est tout aussi vraie que celle que j'ai adoptée, et toutes les deux s'expliquent par les lois qui régissent les sympathies. Qu'on me permette d'éclairer ma pensée par un exemple commun, et par cela même connu de tous.

A la suite d'une indigestion ou d'une mauvaise disposition de l'estomac, il n'est pas rare de voir survenir un violent mal de tête, une migraine intense ; de même un violent mal de tête, une migraine intense déterminent souvent des nausées, des vomissements, une véritable indigestion. N'est-il pas évident que, conséquemment aux relations intimes qui unissent le cerveau et l'estomac, les maladies de l'un sont tour à tour causes et effets des maladies de l'autre ?

Ces sortes de sympathies, dont la physiologie tient grand compte, et que j'aurai moi-même à examiner dans une autre partie de cet ouvrage, ne sont pas limitées aux organes et aux fonctions normales de l'économie ; elles s'étendent à divers états pathologiques, et ce qui se passe entre l'obésité et l'impuissance en est une preuve certaine.

Ces deux affections, en effet, peuvent être tour à tour cause et effet l'une de l'autre ; et il n'est pas plus rare de voir un obèse impuissant qu'un impuissant pourvu d'un embonpoint considérable.

Ici je ne dois m'occuper de l'obésité qu'en tant qu'elle produit l'anaphrodisie.

L'obésité, il faut bien le reconnaître, n'est pas toujours le résultat d'une nutrition vicieuse ; elle est quelquefois due à une prédisposition particulière, à une idiosyncrasie spéciale :

dans ce cas, elle est presque constamment accompagnée d'une impuissance, sinon complète, au moins d'une indifférence pour les plaisirs vénériens et d'une paresse des organes génitaux qui touchent de bien près à l'impuissance. Chez les individus atteints de polysarcie naturelle, la verge et les testicules contrastent étrangement, par leur petitesse, avec les formes énormes de toutes les autres parties du corps ; ils sont cachés et perdus dans un monceau de graisse, et leur présence est à peine signalée par quelques poils rares et clair-semés.

Dans l'obésité accidentelle, c'est-à-dire dans celle qui apparaît à l'âge moyen, à la suite d'une alimentation copieuse et succulente, d'une vie molle, sans fatigues physiques et sans préoccupations morales, les organes génitaux conservent ordinairement le volume qu'ils présentaient avant l'embonpoint, mais le développement énorme des parties voisines, avec lesquelles on les compare naturellement, les fait paraître plus petits ; quelquefois, il est vrai, les testicules, obéissant à la loi physiologique qui proportionne le volume d'un organe à l'exercice de sa fonction, s'atrophient et rendent alors réelle la diminution des parties génitales externes.

Mais que cette atrophie soit vraie ou fausse, le coït est assez souvent rendu impraticable par le développement considérable de l'abdomen ; c'est un obstacle mécanique dont l'homme triomphe quelquefois par la position qu'il prend et qu'il donne à la femme, mais qu'il lui est, quelquefois aussi, impossible de surmonter.

La morale et les bienséances semblent se révolter contre de pareilles prescriptions médicales, et il me faut, pour les justifier, m'appuyer sur l'autorité de de Lignac : « On peut, dit-il, pour faciliter les époux, permettre la situation qui leur est la plus commode. La religion ne s'y oppose pas, lorsque le but où tendent ces efforts est la multiplication de l'espèce. Il est plus contraire à la sainteté des dogmes de la religion de jouir des plaisirs stériles que de chercher à les rendre féconds par les moyens qu'indiquent la nature et l'instinct à tous les animaux. Je n'entends pas conseiller aux époux ces postures inventées par la débauche et le libertinage le plus effréné, capables de causer la stérilité, bien loin d'y remédier..... Que ces attitudes trompeuses, qui semblent offrir l'image de la volupté aux cœurs corrompus et flétris, restent dans les lieux où l'amour n'a jamais pénétré sans horreur, dans ces lieux où le plaisir est un monstre auquel on sacrifie avec les transports de la fureur ! L'hymen, plus attentif à donner de l'énergie à la volupté qu'à multiplier les sacrifices qui l'appellent, bannit de ses mystères tout ce qui peut effaroucher la pudeur et la décence, car il en est une, quoi qu'on disent les cyniques. Toute posture qui tend à écarter de la jouissance les fruits qu'on a lieu d'en espérer, est contraire aux lois naturelles ; et toutes celles qui aplanissent les obstacles qui s'opposent à la conception doivent être admises dans les cas qui les exigent (1). »

Cependant, pour que l'obésité constitue un empêchement absolu au coït, il faut qu'elle ait atteint des proportions considérables, car l'esprit, poussé par le démon de la volupté, a des ressources infinies, et, sous ce rapport, l'homme n'est pas inférieur aux autres êtres de la création, dont le poëte a dit :

Et dans les doux instants de leurs folles ardeurs,
Les bêtes ne sont pas si bêtes que l'on pense.

Malheureusement l'obstacle mécanique n'est pas la plus grande difficulté à vaincre ; l'obésité détermine une débilité génitale plus ou moins prononcée, et qui peut même aller jusqu'à l'impuissance complète. Les organes copulateurs ne sont pas seuls à subir cette influence : l'enthousiasme vénérien s'affaiblit, les désirs s'éteignent, et l'homme parvenu à cet état n'a plus d'autres passions que celles de la table, et ne rêve d'autre bonheur que celui d'une vie sans agitation, dans la plus parfaite quiétude de l'âme et du corps.

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(1) De Lignac, *De l'homme et de la femme considérés physiquement dans l'état de mariage*, 1774, t. I, p. 389 et 390.

Quelquefois, et ce sont les cas les moins communs, l'aiguillon intérieur ne s'est émoussé qu'incomplétement, et alors l'organe, devenu paresseux, répond faiblement et même ne répond pas du tout à la voix de l'imagination. C'est le cas de ces sybarites qui, voulant avoir toutes les délices à la fois, appellent à leur table somptueuse des femmes sémillantes d'esprit et de beauté, et dont les demi-toilettes, les poses lascives et les propos badins évoquent une ombre, un pâle fantôme des voluptés de l'amour.

La durée et la gravité de l'espèce d'impuissance que j'examine ici sont entièrement sous la dépendance de l'obésité qui la produit : si l'obésité tient à une idiosyncrasie, à une prédisposition native, l'impuissance sera à peu près, comme cette sorte d'obésité, incurable. Seulement, si l'anaphrodisie n'est qu'incomplète, c'est-à-dire, si les désirs vénériens ne sont que paresseux, si l'érection de la verge et l'éjaculation du sperme sont lentes à se produire, on s'adressera avec avantage à la médication excitante, tant interne qu'externe, tant générale que locale, secondée par l'exercice, la fatigue corporelle même, l'insolation, les bains de mer, l'hydrothérapie, certaines eaux minérales, etc., et un régime diététique approprié.

Quand l'obésité est accidentelle, le traitement de l'impuissance se confond avec le traitement de l'obésité elle-même. Celui-ci est aussi variable que les causes qui peuvent donner naissance à la maladie principale ; mais on peut dire d'une manière générale, que l'on doit surtout s'attacher à faciliter et à augmenter les excrétions ; pour atteindre ce but, la manière de vivre et le régime diététique joueront un grand rôle. On raconte qu'un Hollandais, séduit par la nouvelle de la guérison radicale d'un obèse, obtenue au moyen d'une opération pratiquée par le chirurgien Rothonet, qui, pour le dire en passant, avait fait ce miracle en enlevant huit livres d'épiploon dans le débridement d'une hernie ventrale, ce Hollandais, dis-je, se rendit à Paris pour se soumettre à la même opération; heureusement pour lui, un seigneur de sa connaissance se chargea de sa cure et le fit enfermer à la Bastille, d'où, après deux mois passés au régime du pain et de l'eau, le Hollandais sortit trop complétement guéri, à ce qu'il paraît, car il lui fallut suivre un nouveau régime pour réparer la maigreur extrême à laquelle il était réduit.

Quoique la durée et la persistance de l'anaphrodisie soient réglées sur celles de l'obésité, et que dans la plupart des cas, il ne soit pas nécessaire de diriger contre l'impuissance un traitement spécial, il est utile néanmoins de ne pas entièrement abandonner à la nature le soin de réveiller les désirs vénériens, et de rappeler la vigueur perdue dans les organes copulateurs; il la faut seconder dans ce but louable, et pour cela faire, on se conformera aux conseils que j'ai donnés plus haut, à l'occasion de l'impuissance amenée par l'obésité native, et on recourra aux excitants moraux dont j'ai parlé dans le paragraphe relatif aux tempéraments.

Amaigrissement. — Les causes de l'amaigrissement sont encore plus nombreuses que celles de l'obésité; mais quelle que soit la nature de ces causes, l'amaigrissement qui en résulte est toujours caractérisé par une perturbation qui amène progressivement, mais continuellement, une déperdition de substance.

C'est à ce titre que l'amaigrissement trouve ici sa place : mais, par cela même que je ne l'accueille qu'en vertu d'un de ses caractères les plus généraux, je ne dois présenter sur lui que des considérations générales, car j'aurai à l'examiner plus d'une fois et d'une manière plus spéciale sous les noms de *marasme*, *consomption*, etc., quand il se trouvera lié à certains états pathologiques, tels que le diabète, la spermatorrhée, etc., qui solliciteront particulièrement mon attention.

Le marasme, qui est le dernier degré de l'amaigrissement, par cela même qu'il attaque les sources de la vie dans les fonctions plastiques de l'économie, frappe de débilité et de mort toutes les parties de l'organisme, sans même en excepter les facultés les plus nobles de notre être, les facultés de l'âme et celles de l'esprit.

Pendant longtemps on a cru que les phthisiques, dont le marasme est caractéristique, jouissaient d'une immunité qui, dans quelques cas allait jusqu'à l'excès de l'énergie virile. Mais les recherches du professeur Lorain et les observations de M. Siredey ont fait justice de cette erreur, et ont établi, au contraire, que l'on rencontre presque toujours *chez les phthisiques une atrophie relative ou un développement incomplet des organes génitaux*, *d'où une frigidité habituelle*, *sinon une impuissance véritable* (Siredey).

En effet, on comprendrait difficilement comment, au milieu du trouble profond, de la désorganisation générale dont toute l'économie est frappée par le marasme, on comprendrait difficilement, dis-je, comment une seule fonction, la plus délicate, la plus capricieuse de toutes, resterait intacte et complète. Ce problème heureusement n'a point été posé à l'investigation de la science, et les faits nous avertissent que le sens génital et l'appareil copulateur participent au dépérissement général, et suivent dans leur marche descendante toutes les autres fonctions de l'organisme.

Avec la flétrissure de la verge et l'atrophie des testicules, les désirs vénériens s'éteignent et l'imagination s'affaiblit. Vainement on tente le malade par les images les plus lascives, par les discours les plus badins ; comme ceux dont parle l'Écriture, il a des yeux pour ne pas voir, et des oreilles pour ne pas entendre ; si l'âge lui permet des souvenirs, sa mémoire oublieuse ne lui retrace plus le tableau des voluptés passées, et son imagination n'a plus les longs espoirs ni les douces pensées dont parle le poëte. A moitié descendu dans la tombe, peut-il donner à autrui la vie qui lui échappe ? les forces qui lui restent, ne les doit-il pas consacrer à sa conservation propre ? La nature, plus prévoyante que nous, l'a voulu ainsi, et en glaçant notre imagination par le marasme, elle nous montre sa sollicitude même au milieu des maux dont elle nous accable.

Le marasme est ordinairement incurable, et la médecine n'est pas appelée à combattre l'impuissance qui l'accompagne.

Mais l'amaigrissement n'arrive pas toujours à cette limite extrême, et alors l'art peut intervenir avec des chances de succès.

Avant toute chose, il faut rechercher la cause de l'amaigrissement et la combattre. Le nombre des causes qui peuvent amener cet état est, je le répète, fort considérable ; je n'ai pas ici à en faire l'énumération, que l'on trouvera dans les ouvrages généraux de pathologie ; mais, je le redis encore, le traitement de l'impuissance ne doit venir qu'après l'éloignement de la cause qui a produit et souvent entretient l'amaigrissement. Au début la thérapeutique de cette sorte d'impuissance puise ses principaux éléments dans l'hygiène et le régime diététique.

Les substances que les anciens appelaient *analeptiques* jouent ici un grand rôle : parmi celles-ci, les unes sont nourrissantes et les autres toniques et stimulantes ; c'est par les premières qu'il faut ordinairement commencer. On prescrit les bouillons de coq, de vieille perdrix, de chapon, de poule, légèrement aromatisés avec la cannelle ; le chocolat, le riz, le salep, le sagou, préparés au jus de bœuf ; le mouton et la volaille rôtis ; quelquefois, selon l'état ou les dispositions de l'estomac, on se trouve bien de l'usage du lait pur ou coupé avec le lichen d'Islande, car le meilleur analeptique n'est pas celui qui contient le plus de parties nutritives, mais bien celui qui est le plus facilement assimilable.

Il est nécessaire que ce régime diététique soit secondé par l'habitation à la campagne, la quiétude complète de l'âme, un exercice modéré, les promenades à cheval, et par un sommeil long et tranquille.

Lorsque, sous l'empire d'une semblable hygiène, les chairs auront repris tout à la fois plus de volume et plus de ton, lorsque les forces générales auront retrouvé quelque énergie, il conviendra de passer aux toniques et aux stimulants généraux et locaux.

Le régime alimentaire est à peu près le même que celui que je viens d'indiquer; seulement, on donne la préférence aux viandes noires et rôties, comme bœuf, gibier, etc.; les truffes et les légumes frais en font également partie, ainsi que les vins généreux, surtout ceux du Midi.

Quant à la médication proprement dite, les ressources sont très-nombreuses, depuis le fer, le quinquina, le colombo, etc., jusqu'à l'hydrothérapie, les bains de mer et les eaux minérales. Mais il faut se garder de précipiter sa marche et d'arriver trop tôt aux moyens les plus énergiques. Il importe, avant tout, de ménager les voies digestives dont l'irritation ramènerait tout à la fois l'abattement général et l'atonie des organes génitaux; le médecin réglera donc sa conduite d'après l'état des premières voies, et agira avec toute la circonspection que la science lui impose en pareille occurence.

Assez généralement il n'est pas nécessaire d'instituer un traitement local, parce que la débilité des organes de la génération n'est ici qu'une manifestation de la débilité générale.

Cependant quelquefois il est utile d'agir sur les organes génitaux, afin de les stimuler et de hâter leur retour sous les lois de la vitalité normale. On donne la préférence aux agents dont l'application est externe, puisque j'ai déjà dit que dans la médication générale et interne pouvaient entrer tous les stimulants tant généraux que spéciaux. Les frictions sèches, ou toniques, ou aromatiques pratiquées sur les lombes ; les lotions froides avec les décoctions de quinquina ou de cascarille sur le périnée et les organes copulateurs ; les embrocations sur les mêmes parties avec l'huile cantharidée ou l'éther phosphoré, sont, avec les bains de mer, les bains de rivière, les douches périnéales et les eaux minérales, les moyens dont on retire le plus d'avantages.

§ II. — De la circulation.

C'est ici le cadre de ces maladies diverses, connues sous le nom générique de *fièvres*, et dont les dénominations spéciales ont varié avec chaque nosologiste ; mais qu'on les appelle, avec les anciens, fièvre muqueuse, fièvre bilieuse, fièvre maligne, fièvre putride, ou qu'on les désigne, avec les modernes, sous le nom commun de fièvre typhoïde, leur étude, au point de vue spécial de l'impuissance, ne saurait entrer dans mon cadre.

L'homme, comme d'ailleurs tous les êtres organisés, n'a, aux yeux de la nature, d'autre mission, en recevant la vie, que celle de perpétuer son espèce ; mais cette mission n'est réalisable que tout autant que l'individu n'est pas menacé dans son existence propre, et qu'il peut communiquer la vie à autrui sans que la sienne soit *prochainement* compromise.

Cette condition ne se rencontre pas dans l'état pathologique connu sous le nom de *fièvre*.

Aussi pas plus qu'ailleurs, la nature, sous ce rapport, ne s'est montrée marâtre envers nous.

Dans toutes les maladies aiguës, quelle qu'en soit d'ailleurs la cause, l'inaction et le silence ont été imposés aux organes et au sens vénériens. Comme dans un pays envahi par l'ennemi et dont tous les corps d'armée abandonnent leurs retranchements et leurs garnisons pour se porter sur le point menacé, on dirait que les forces vitales délaissent les appareils où leur action peut sans péril être momentanément suspendue, afin d'opposer une résistance plus énergique au mal qui se présente.

Aussi l'impuissance, dans ces états pathologiques, est-elle un de ces symptômes qu'il serait dangereux de combattre; il n'est venu à l'esprit de personne, que je sache, de songer à sauvegarder la vie de propagation pendant le coma d'une fièvre typhoïde, ou les accès d'une fièvre intermittente pernicieuse.

Je ne m'arrêterai donc pas davantage à une impuissance fatale et salutaire, je pourrai même dire naturelle, mais non physiologique, et j'aborderai la seule maladie de la circulation, qui, sans menacer *immédiatement* la vie de l'individu, offre quelquefois l'impuissance comme un de ses symptômes. Cette maladie est la chlorose.

CHLOROSE. — Il n'est plus aujourd'hui personne qui soutienne, avec Hoffmann, que la chlorose est une maladie spéciale aux femmes; les observations publiées par Copland (1), Roche (2), Désormeaux (3), Tanquerel des Planches (4) et

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(1) Copland, *Dict. of Pract. Medicine*. London, t. I, p. 87.

(2) Roche, *Nouveaux éléments de pathologie*. Paris 1844, t. II, p. 389.

(3) Désormeaux, *Répertoire général des sciences médicales*, art. CHLOROSE.

(4) Tanquerel des Planches, *Presse médicale*, n° 54, juillet 1837, p. 425.

J. Uzac (1), confirmées tous les jours par des observations nouvelles, ne laissent aucun doute sur la réalité de cette affection chez les hommes.

Je ne viens pas grossir le nombre des faits confirmatifs de cette opinion; je veux seulement réparer un oubli qui s'est glissé dans l'histoire de la chlorose de l'homme, et que la connaissance que nous avons de celle de la femme aurait dû cependant prévenir.

Je veux parler de l'état de l'orgasme vénérien.

Est-il besoin de rappeler que la chlorose a toujours, chez les personnes du sexe, un retentissement plus ou moins profond sur les fonctions de l'appareil génital, à ce point que quelques auteurs, prenant l'exception pour la règle, mais voulant consacrer par une désignation spéciale l'influence exercée par la maladie sur la fonction génératrice, l'appellent *fièvre amoureuse*, *fièvre d'amour?*

Ces circonstances, qui m'avaient depuis longtemps frappé, me firent soupçonner la même influence chez l'homme, et mes investigations, dirigées vers ce but, ne tardèrent pas à me convaincre de la réalité de ma supposition.

Un des faits les plus saillants qui s'offrirent à moi fut le suivant :

Un jeune homme de vingt-cinq ans, maigre, pâle, aux mouvements et à la parole lents, aux cheveux châtain clair, originaire de Pologne, et alors instituteur dans une maison particulière, se présente à ma consultation comme atteint d'impuissance.

Il accuse depuis longtemps des troubles du côté des voies digestives, et ces troubles ont pris une telle intensité que toute digestion est devenue presque impossible; la constipation est permanente, mais il n'existe de douleurs ni au ventre ni à l'estomac.

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(1) J. Uzac, *De la chlorose chez l'homme*, thèse de doctorat. Paris, 1853.

Les fonctions de l'innervation sont encore plus affectées : la sensibilité physique est devenue tellement exquise que le moindre changement de température, que le plus petit bruit, le plus léger frottement, l'affectent d'une manière pénible ; la sensibilité morale n'est pas plus sauvegardée, car le malade ne peut lire sans pleurer et sans être profondément ému, je ne dis pas un roman, mais les nouvelles diverses enregistrées par les journaux ; le sommeil est nul et l'opium est impuissant à le rappeler.

Au milieu de ces désordres, les facultés intellectuelles ne sont pas restées intactes, et le malade est atteint d'une hypochondrie profonde qui le pousse incessamment vers le suicide.

A ce cortége si connu des symptômes de la chlorose auquel il faut ajouter la décoloration de la peau et la flaccidité des chairs, il manquait un signe dont la présence n'est pas d'une absolue nécessité pour caractériser l'affection, mais dont je devais tenir compte dans mon diagnostic.

Je veux parler du bruit de souffle signalé dans quelques artères, et surtout dans les carotides.

Hors ce signe, rien ne manquait au tableau ordinaire de la chlorose.

Les organes génitaux ne présentaient extérieurement rien de particulier. La verge et les testicules avaient leur volume ordinaire, et la peau du scrotum se contractait encore sous l'impression du froid ou de la main.

Les désirs vénériens étaient absents, et les plaisirs de l'amour inspiraient même, je ne dirai pas du dégoût, mais une indifférence bien proche de la répulsion.

Les érections étaient nulles, quelle que fût la nature des excitations appelées à les provoquer. A des intervalles assez éloignés, et sans influence de rêves lascifs ou de pensées amoureuses, des éjaculations se produisaient pendant la nuit, tantôt à l'état de veille, tantôt pendant le sommeil, occasionnant une certaine volupté, mais laissant après elles une lassitude générale dont le malade se ressentait plusieurs jours de suite.

Tous ces accidents du côté de l'appareil génital étaient contemporains de ceux qui m'avaient été signalés du côté des voies digestives et de l'innervation. Avant leur arrivée, la fonction génitale s'accomplissait, sinon avec énergie, du moins avec régularité et sans inspirer aucune crainte.

En présence de tous ces faits, je ne pus douter que j'avais affaire à une impuissance symptomatique de la chlorose.

Le traitement devait être la pierre de touche de ce diagnostic.

Il le fut en effet, et ne me laissa aucun doute sur la vérité de mon jugement : le quinquina d'abord, à cause de l'état du tube digestif, les ferrugineux ensuite, associés au régime approprié à la chlorose, et enfin l'habitation à la campagne, eurent raison, dans moins de huit mois, de tous les phénomènes morbides, tant physiques que moraux.

Les organes génitaux ne furent l'objet d'aucune thérapeutique spéciale; sous l'influence du traitement général de la chlorose, ils reprirent peu à peu leur énergie perdue, et les désirs vénériens reparurent au fur et à mesure que la mélancolie et les idées de suicide s'affaiblissaient.

Depuis deux ans à peu près, la guérison ne s'est pas démentie, et le malade, que je vois de temps en temps, jouit de l'intégrité parfaite de toutes ses fonctions.

Deux autres faits analogues d'impuissance, mais avec des caractères moins tranchés du côté des facultés morales, également traités et guéris par les ferrugineux et le régime tonique, prouvent que la chlorose chez l'homme exerce sur les organes génitaux, comme chez la femme, une influence bien marquée, et que cette influence est identique dans les deux sexes, non-seulement sur les désirs vénériens qu'elle glace, mais encore sur les organes génitaux qu'elle frappe, chez l'un d'impuisssance, et chez l'autre de frigidité. Comment se fait-il donc que jusqu'à présent les rapports qui unissent l'impuissance et la chlorose dans notre sexe aient été passés sous silence, et que les désordres de la fonction génitale chez la femme n'aient pas provoqué l'examen de la même fonction chez l'homme ? Le peu de fréquence de la chlorose chez ce dernier et les opinions diverses que l'on a émises sur la nature de la maladie sont peut-être la cause de cet oubli des observateurs.

Je ne sais si la chlorose syphilitique décrite par M. Ricord peut, comme la chlorose ordinaire, s'accompagner d'impuissance. Je n'ai pas eu occasion d'observer cette variété de la maladie.

Quoi qu'il en soit, l'histoire de l'impuissance dont il est ici question se confond tellement avec celle de la chlorose, que l'étiologie, le pronostic et le traitement de l'une sont identiquement les mêmes que l'étiologie, le pronostic et le traitement de l'autre.

§ III. — De l'innervation.

Les altérations de l'innervation se partagent en deux grandes classes : 1° celles qui sont liées à une lésion matérielle des organes, et qui ont, si je puis ainsi dire, une anatomie pathologique ; 2° celles qui ne laissent après elles aucune trace dans les organes, et que l'on désigne généralement sous le nom de *névroses*.

Les altérations organiques du système nerveux qui jettent le trouble dans l'innervation génitale, sensibilité et motilité, peuvent exister, soit dans les centres nerveux, cerveau et moelle épinière, soit sur le trajet des nerfs conducteurs, soit sur les nerfs eux-mêmes de l'appareil copulateur.

Je renverrai cette dernière catégorie au chapitre consacré aux maladies des organes génitaux, ainsi que je l'ai déjà fait à l'occasion de la nutrition et de la circulation, afin de pouvoir embrasser, dans un seul coup d'œil, le tableau complet des maladies locales qui entraînent l'impuissance.

Les névroses, de leur côté, se partagent en deux grandes classes, selon qu'elles affectent plus spécialement ou l'innervation organique ou l'innervation intellectuelle, si je puis ainsi dire.

De cette manière, en récapitulant toutes les divisions que je viens d'admettre, j'aurai à examiner :

1° Les troubles de l'innervation avec altérations anatomiques, qui comprendront, selon le siége de ces altérations :

a. Maladies des centres nerveux;

b. Maladies des nerfs intermédiaires des centres nerveux et de l'appareil génital lui-même.

2° Les troubles de l'innervation sans altérations anatomiques, qui comprendront :

a. Les névroses organiques;

b. Les névroses intellectuelles.

C'est dans cet ordre que je vais envisager ce cadre si vaste.

1° *Troubles de l'innervation avec altérations anatomiques.*

a. Maladies des centres nerveux. — Pour répondre à toutes les données de ce programme, il faudrait passer en revue la pathologie entière du cerveau, de la moelle et de leurs enveloppes, car il n'est pas une seule des affections de ces organes qui ne puisse agir et qui n'agisse en effet sur le sens et l'appareil de la génération.

Mais si, comme je l'ai fait pour la circulation, j'éloigne de mon cadre les maladies qui, par leur acuité et leur rapidité, menacent prochainement la vie de l'individu, et parmi lesquelles se trouvent la grande famille des phlegmasies, et celle des hémorrhagies, etc., il ne reste plus que quelques affections dont les unes, comme l'hydrocéphale chronique, le ramollissement du cerveau, etc., appartiennent d'ordinaire à des âges où l'appareil vénérien n'a pas encore commencé ou a déjà fini son rôle; et dont les autres, comme le cancer, les tubercules, les hydatides du cerveau ou de la moelle, et les altérations diverses des méninges cérébrales ou rachidiennes, n'offrent partout dans leur histoire que des contradictions et des doutes.

Cependant on peut dire d'une manière générale, en s'appuyant sur les lois même de l'innervation, que toutes les maladies des centres nerveux, quelle qu'en soit d'ailleurs la nature, ont un retentissement quelconque sur la fonction génitale, soit en abolissant ou pervertissant l'intelligence, et par suite les désirs vénériens, soit en agissant directement *d'une manière ou d'une autre* sur les organes génitaux eux-mêmes, car cette action est loin d'être toujours débilitante, puisque Serres a noté l'érection du pénis six fois sur onze cas d'hémorrhagie cérébelleuse.

Mais si le cadre de cet ouvrage ne me permet pas d'aborder la description de chacune de ces maladies. je dois les signaler à l'attention du médecin comme un point de départ très-fréquent de l'impuissance.

Évidemment, je ne parle pas ici de ces affections aiguës, la méningite, l'apoplexie, la cérébrite, la myélite, etc., qui arrachent celui qu'elles frappent à ses attributs, à ses besoins, à ses facultés, en un mot à sa mission sur cette terre ; mais de ces maladies à marche lente et quelquefois tortueuse qui, tout en apportant à l'organisme un germe de mort, respectent longtemps encore les sources de la vie : parmi elles sont les tumeurs de toute nature, exostose intracrânienne ou intravertébrale, productions morbides, dégénérescences, etc., en un mot toutes les affections qui amènent une altération lente et progressive des centres nerveux.

La possibilité d'une de ces affections dont le début est bien souvent insidieux, devra toujours être présente à l'esprit du médecin et avoir sa place dans l'étiologie de l'impuissance; il suffit que l'attention soit éveillée sur ce point, car aussitôt des symptômes tels que fourmillements dans les membres inférieurs, fatigue rapide, constipation, etc., dont le malade ne tient encore aucun compte, tant ils sont légers et fugitifs, prennent, aux yeux du médecin averti, une importance et une gravité faciles à comprendre. Que de malheureux eussent été sans doute conservés, si les premiers signes de leur mal avaient pu être appréciés à leur juste valeur! Je le répète donc, car je ne saurais trop insister sur ce point, toutes les fois que l'origine d'une impuissance sera difficile à saisir, que sa source, comme il n'arrive que trop souvent, se perdra dans des méandres inextricables, qu'on interroge avec soin l'innervation générale, et qu'on ne l'abandonne qu'après avoir minutieusement exploré l'intelligence, la sensibilité et la motilité.

Que l'organe copulateur, par suite d'une affection des centres nerveux, soit frappé d'asthénie ou de paralysie, le résultat est le même, l'érection est impossible (1); que l'altération porte sur la sensibilité ou sur la motilité, le traitement de l'impuissance n'en subit aucune modification, ou plutôt ce traitement est nul, car toute l'attention du médecin et toutes les ressources de l'art doivent s'adresser à la maladie mère, à l'affection des centres nerveux, source de tous les désordres.

Il n'en est pas ainsi lorsque, l'affection des centres nerveux ayant disparu, l'impuissance persiste. Il est alors nécessaire de recourir à un traitement spécial que j'exposerai dans le chapitre suivant, alors qu'il sera question de l'impuissance consécutive.

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(1) Voyez le mécanisme de l'érection dans les considérations physiologiques placées en tête de cet ouvrage, page 28.

b. Maladies des nerfs intermédiaires des centres nerveux et de l'appareil copulateur. — Les maladies des nerfs intermédiaires qui peuvent amener la paralysie de la verge sont de deux sortes : 1° celles dont la cause est appréciable et saisissable, comme la compression, la dégénérescence, la section du nerf; 2° celles dont la cause est entièrement vitale.

La paralysie symptomatique des affections du premier groupe est facile à comprendre, elle porte en quelque sorte son explication avec elle. Mais il n'en est pas de même de la paralysie sans lésion anatomique, sans excuse mécanique, si je puis ainsi dire, dont il n'est cependant pas possible de contester l'existence : on sait, en effet, que l'hystérie peut amener la paralysie de quelques muscles seulement; que dans certaines intoxications saturnines, le nerf radial est frappé d'immobilité, et que des faits de paralysies de la vessie et du rectum ont été recueillis, sans qu'il ait été possible de les rattacher à une lésion matérielle quelconque.

C'est là une espèce de névrose que, pour la logique de mes divisions, j'ai dû considérer à part, mais qui, dans la pratique, se confond avec la névrose génitale elle-même, tant au point de vue de la séméiotique que sous le rapport du traitement.

Je renvoie donc le lecteur au chapitre que j'ai consacré précédemment à l'impuissance idiopathique, et je reviens ici aux affections des nerfs intermédiaires, avec lésions anatomiques et produisant la paralysie de l'organe copulateur.

Ces affections présentent toutes un caractère commun : celui d'empêcher la libre circulation du fluide nerveux, en d'autres termes, et pour ne pas tomber dans les abstractions métaphysiques, elles sont constituées par un arrêt de communication, sur un des points du trajet des nerfs, entre les centres nerveux et l'appareil génital.

L'obstacle qui intercepte ainsi la communication peut être de nature diverse : tantôt c'est un organe voisin du nerf, déplacé ou hypertrophié ; tantôt c'est une tumeur développée dans le voisinage du nerf ou dans le névrilème lui-même ; tantôt c'est une dégénérescence du nerf ; tantôt enfin c'est la section même du filet nerveux.

Si l'on réfléchit à la position qu'occupe dans le bassin le plexus sacré d'où émanent les nerfs principaux qui vont animer l'organe copulateur, on comprendra la difficulté, je dirai même l'impossibilité de constater sur le vivant, et d'une manière directe, les lésions que je viens de signaler.

Les symptômes pathogéniques sont des guides moins incertains, mais ils ne sont pas tellement distincts des signes que présentent les affections des centres nerveux qu'on leur doive accorder une pleine confiance. N'est-il pas vrai, en effet, que l'hémiplégie ou que la paralysie générale n'accompagnent pas toujours les lésions du cerveau et de la moelle ; et que, de leur côté, ces lésions se traduisent quelquefois aussi par de simples paralysies partielles ? S'il en est ainsi, et la science nous en pourrait fournir de nombreux exemples, comment distinguer les paralysies partielles dues aux lésions des centres, des paralysies partielles déterminées par les lésions des nerfs intermédiaires ?

Notre art, il faut le reconnaître, laisse beaucoup à désirer sous ce rapport, et notre ignorance est ici d'autant plus regrettable que, en l'absence d'un diagnostic certain, on peut adresser à la moelle, par exemple, une médication dont elle n'a que faire.

Au point de vue tout spécial de l'impuissance, l'absence d'un diagnostic différentiel certain est également une chose fâcheuse, car le traitement de la paralysie génitale se confondant avec celui de la maladie qui la produit, peut s'égarer dans des indications contraires ou, tout au moins, douteuses.

2° *Troubles de l'innervation sans lésions anatomiques.*

a. Névroses organiques. — Sans parler des névroses de l'intelligence sur lesquelles tout le monde est à peu près d'accord, de nombreuses classifications ont été proposées pour les névroses organiques. Je ne dois point ici discuter la valeur de tous ces travaux, et, sans prendre parti pour aucun d'eux, j'estime qu'en considérant le rôle bien distinct que jouent la sensibilité et la motilité dans la vie de relation et dans la vie de nutrition, on peut établir, en ne tenant aucun compte des névroses symptomatiques et sympathiques, quatre grandes classes qui seront :

1° *Névroses de la sensibilité de la vie de relation :* ou elles sont spéciales aux sens, comme la berlue, la diplopie, etc., pour la vue ; le tintouin, la paracousie, etc., pour l'ouïe, etc. ; ou elles sont générales, comme toutes les névralgies.

2° *Névroses de la motilité de la vie de relation :* l'épilepsie, l'éclampsie, la catalepsie, les convulsions essentielles, le tétanos, la chorée et la paralysie.

3° *Névroses de la sensibilité de la vie de nutrition :* la gastralgie, la cardialgie, l'hystéralgie et en général toutes les viscéralgies.

4° *Névroses de la motilité de la vie de nutrition :* aphonie, spasme du larynx, coqueluche, asthme, angine de poitrine, palpitation, syncope, spasme œsophagien, vomissements nerveux et diarrhée.

Ce n'est pas un vain amour des classifications qui m'a conduit à faire l'énumération que l'on vient de lire ; j'ai voulu, dans l'intention d'économiser l'espace et le temps, que l'on saisît dans un seul coup d'œil l'ensemble des névroses organiques, afin qu'on s'assurât combien peu l'impuissance a de relations avec elles.

Sans doute les secousses, surtout quand elles sont souvent répétées, imprimées au système nerveux par l'épilepsie, la catalepsie, etc., peuvent amener, après un temps plus ou moins long, un affaiblissement général dont l'innervation génitale aura sa part, ainsi qu'il arrive quelquefois pour l'ouïe, la vue, le goût, etc., etc.; mais alors l'impuissance (1) n'est plus symptomatique; elle est le résultat plus ou moins éloigné d'un état morbide qui bien souvent même a cessé d'exister, et, dans ce cas, je la dois distraire de ce chapitre et en réserver l'étude pour celui que je consacre à l'impuissance consécutive.

b. Névroses de l'intelligence ou vésanies. — Les principes les plus simples de la physiologie indiquent d'avance les rapports intimes qui doivent exister et qui existent réellement entre les troubles de la fonction génératrice et les désordres de l'intelligence. Seulement, quand on pénètre dans l'étude de ces troubles et de ces désordres, et que l'on remonte aux causes des vésanies, l'esprit s'arrête devant des doutes qu'il n'est pas toujours facile d'éclaircir.

Je m'explique :

Est-il toujours possible de déterminer si l'impuissance, quand elle existe concurremment avec une névrose de l'intelligence, est un symptôme de cette névrose?

Je ne le crois pas, et c'est ici que commencent les hésitations de l'esprit.

Il est incontestable qu'un grand nombre des causes des vésanies peut également produire l'impuissance; telles sont, par exemple, les passions tristes, les préoccupations fixes de l'âme, les troubles de la digestion, les excès de toute nature, etc.

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(1) Le mot impuissance n'est pas rigoureusement l'expression dont je devrais me servir ici, car les troubles de l'innervation génitale, à la suite des névroses dont je parle, peuvent se traduire par un état tout opposé à l'impuissance, ainsi que le signale Esquirol à l'occasion de l'épilepsie (*Des maladies mentales*, t. I, p. 283). — C'est seulement pour ne pas abandonner mon terrain et ne pas empiéter sur celui des névroses, que je me suis servi du mot impuissance.

Il est également hors de toute discussion que certains symptômes de vésanie peuvent, par leur présence seule, jeter l'organe copulateur dans l'anaphrodisie, comme cet hypocondriaque dont parle Belhomme qui, se croyant impuissant, l'était en réalité.

Par conséquent étant donnée une névrose de l'intelligence, la manie, la nostalgie, l'hypocondrie, par exemple, trois hypothèses se présentent :

1° Ou l'impuissance est liée à la névrose et en est un symptôme ;

2° Ou l'impuissance est une affection intercurrente à la névrose ;

3° Ou l'impuissance est un épiphénomène de la névrose.

Est-il possible d'établir entre ces trois origines de l'impuissance un diagnostic différentiel qui, tout à la fois, satisfasse l'esprit et mette sur la voie des indications pratiques ?

Je crois la solution de ce problème possible, mais non facile.

Deux circonstances doivent surtout attirer l'attention : 1° les causes de la vésanie, 2° la nature objective des désordres de l'intelligence.

Sous le premier point de vue et en y comprenant toutes les formes de vésanie, depuis la simple illusion des sens jusqu'à la folie la mieux caractérisée, les causes se partagent en morales et en physiques, les premières bien plus fréquentes que les secondes. Selon Parchappe (1), les dix causes les plus fréquentes de l'aliénation mentale se classeraient de la manière suivante pour les hommes : 1° abus de boissons alcooliques,

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(1) *De la prédominance des causes morales dans la génération de la folie.* (*Annales médico-psychologiques*, tome XI, p. 358).

2° revers de fortune, 3° perte d'une personne aimée, 4° frayeur, 5° idiotie, 6° chagrins domestiques, 7° colère, 8° dévotion exaltée, 9° amour contrarié, 10° inquiétude à propos d'argent.

Parmi ces dix causes d'aliénation mentale, il en est certainement six qui peuvent à leur tour produire l'impuissance, ce sont : les abus de boissons, la perte d'une personne aimée, la frayeur, les chagrins domestiques, la dévotion exaltée et l'amour contrarié.

Voici, en effet, un exemple dans lequel les mêmes causes, perte d'une personne aimée et chagrins domestiques, ont donné lieu simultanément à l'impuissance et à l'hypocondrie, sans que la première fût sous la dépendance de la seconde.

Un homme de lettres avait épousé, quelques mois avant la révolution de février, une jeune personne qu'il aimait passionnément; jusqu'à l'avénement de la république, le nouveau ménage ne connut aucun chagrin, car le mari, grâce à un travail fructueux et abondant, pouvait satisfaire les goûts et même les caprices de sa femme. La révolution de février brisa tout ce bonheur; en tarissant les sources du travail du mari, elle apporta dans le ménage d'abord la gêne et ensuite la misère. La jeune femme n'eut le courage ni de supporter ce revers de fortune, ni d'accepter des espérances en un avenir meilleur. Un jour, elle quitta la maison conjugale, et l'on apprit qu'elle vivait à Londres, au milieu du luxe et de l'opulence que lui fournissait un généreux amant.

L'époux abandonné fut si affecté de cette découverte qu'il tomba dans une misanthropie profonde, et fut en même temps frappé d'impuisssance.

Voici à quelle occasion il vint réclamer mes soins.

Une jeune veuve, par conséquent maîtresse de ses actions et juge de sa conduite, était, de tous les amis de l'homme de lettres, restée à peu près seule fidèle à son revers de fortune et à son malheur domestique. Les consolations qu'elle avait apportées au jeune ménage lorsque la gêne et la misère avaient successivement envahi son intérieur, devinrent plus pressantes et plus affectueuses lorsqu'un plus grand chagrin frappa le mari délaissé.

Celui-ci, soit par un effet de son imagination malade, soit que les attentions de la veuve dépassassent réellement les bornes d'une simple amitié, vit un sentiment et des sollicitations d'amour dans les prévenances dont il était l'objet.

Il s'assura que, si ses suppositions étaient exagérées pour le présent, il pouvait du moins former les espérances les plus douces, car la pitié, dans le cœur de la femme, est déjà une nuance de l'amour.

Malheureusement, le souvenir de la fugitive était sans cesse présent à son esprit, et toutes les fois qu'il lui eût été permis de prouver à son amie qu'il avait oublié l'infidèle, ce souvenir jetait le trouble en son âme et glaçait ses organes.

C'est dans cet état qu'il se présenta à moi.

En véritable hypocondriaque qu'il était, il me raconta dans leurs moindres détails toutes les circonstances de sa vie : les joies de son mariage, les tortures de son abandon et les douceurs de l'amitié de la jeune veuve. Un double sentiment le poussait vers la possession de celle-ci : un sentiment de reconnaissance et un sentiment de vengeance; malheureusement, il lui était impossible de prouver autrement que par des paroles, la gratitude dont son cœur était rempli pour son amie, et le mépris dont il se croyait animé contre sa femme. Malgré lui, le souvenir, tantôt agréable, tantôt mauvais de cette dernière, l'obsédait sans cesse, remplissait son esprit des idées les plus tristes, et étouffait tous les désirs de son imagination et tous les efforts de sa volonté.

Bien évidemment, dans ce cas, l'impuissance et l'hypocondrie avaient la même cause; mais c'était là leur seul point de contact. Après cette origine commune, les deux affections devenaient si parfaitement distinctes, que l'une pouvait disparaître et l'autre persister : tels deux cours d'eau partis de la même source, dont un, après quelques sinuosités, se perd au milieu du sable de la route, et dont l'autre poursuit sa marche jusqu'à la rivière prochaine.

Le raisonnement, les distractions, un voyage à la mer et le retour au travail, secondés par une hygiène convenable, rendirent au malade ses facultés viriles sans le débarrasser des tristes préoccupations qui l'obsédaient. Bientôt même l'orgasme vénérien devint assez impérieux pour faire craindre que tous ses désirs ne fussent pas l'expression d'un état normal et régulier.

Cependant cet orgasme était quelquefois terrassé, et l'impuissance rendait alors illusoires les apprêts à de nouvelles voluptés. Cette inertie, me disait le malade, se produit tantôt à la vue d'un objet qui fut cher à ma femme, et tantôt au simple souvenir des caresses que j'échangeais avec elle ; aussi, pour prévenir le retour de ce souvenir, avait-il soin de ne jamais coucher avec sa maîtresse dans la chambre et surtout dans le lit qu'il avait partagés avec la fugitive.

Cette impuissance n'était que passagère ; elle s'évanouissait avec l'émotion produite par l'impression ou le souvenir, et n'avait, comme au début, qu'un point de contact avec l'hypocondrie.

Dans cet exemple, comme dans quelques autres que je pourrais rapporter, la cause de l'impuissance n'était pas dans la vésanie elle-même, puisque la première avait cessé ou ne se produisait qu'accidentellement, alors que la seconde persistait toujours.

Les excès de travaux intellectuels et les excès de coït et de masturbation amènent aussi fréquemment les affections délirantes que les chagrins et les abus des boissons alcooliques.

Or, comme l'impuissance se montre fréquemment aussi au milieu des mêmes circonstances, on peut facilement admettre que les troubles du sens génital sont complétement indépendants des troubles de l'intelligence ; et que, tout au plus, la même cause a donné naissance à la névrose vénérienne et à la névrose intellectuelle, sans que les destinées de l'une soient liées aux destinées de l'autre.

J'insiste sur ces origines communes de l'impuissance et des vésanies, parce qu'à mon avis, on a fait à la névrose intellectuelle une trop large part dans l'étiologie de l'anaphrodisie.

Certes, je ne puis méconnaître que, dans certaines circonstances, l'excitateur de l'orgasme vénérien est détourné au profit d'une idée délirante, et qu'alors l'impuissance est bien sous la dépendance de la vésanie. Mais il faut reconnaître aussi que ces cas sont plus rares qu'on ne pense, et que l'on a été induit en erreur par une communauté d'origine dont on n'a pas tenu assez compte.

Il est temps de remettre les choses en leur place et de ne plus donner aux vésanies un rôle prépondérant dans l'étiologie de l'impuissance : qu'on y regarde de près, et l'on sera bientôt de mon avis.

Cependant, ainsi que je l'ai dit tout à l'heure, certaines aberrations intellectuelles détournent à leur profit le consensus érotique et produisent l'indifférence vénérienne plutôt que la paralysie de l'appareil copulateur. De ce nombre sont les vésanies partielles, à délire spécial, telles que l'hypocondrie, la mélancolie, la nostalgie, etc.

D'autres, en amenant la subversion des facultés intellectuelles et morales, peuvent affecter le sens génital d'excitations anormales et produire la perversion du génésique. Telles sont les diverses espèces de manies.

Enfin les vésanies absolues, caractérisées par l'affaiblissement ou l'abolition des facultés intellectuelles, comme le crétinisme, l'imbécillité, l'idiotie et la démence, présentent quelquefois des caractères tout opposés à l'impuissance, et sont marquées par une salacité pathologique.

En résumé, dans l'immense majorité des cas, l'impuissance et la vésanie reconnaissent la même cause, et, malgré cette communauté d'origine, sont indépendantes l'une de l'autre, comme le sont deux fils d'un même père. Par conséquent le traitement de l'impuissance doit s'adresser à la cause elle-même, et ne voir dans la vésanie qu'une complication dont, en saine pratique, il faut tenir compte.

Cependant dans quelques circonstances la vésanie est bien réellement le point de départ de troubles du côté des fonctions génitales; mais ces troubles sont loin d'être constamment les mêmes : tantôt il n'existe qu'une simple diversion du consensus érotique; tantôt il y a perversion morale du sens génital; et tantôt enfin il se montre une excitation morbide des organes vénériens, contrastant avec l'affaiblissement des facultés intellectuelles.

Dans ces cas, le traitement de ces troubles génésiaques se confond avec celui de la vésanie; il est rarement utile de s'adresser directement au sens génital; au contraire, une thérapeutique spéciale peut, la plupart du temps, augmenter des désordres que fait seul disparaître l'amendement des facultés intellectuelles.

§ IV. — D'une intoxication.

Qu'on me permette d'employer ici le mot *intoxication* dans son sens le plus large, dans son acception la plus générale, et d'entendre, par cette expression, l'introduction dans l'organisme d'un agent morbide, virus ou poison, capable de produire les accidents les plus graves et même la mort, mais à la condition de ne les amener que lentement et pour ainsi dire à la longue.

Cette dernière circonstance distingue l'intoxication de l'empoisonnement. Celui-ci, en effet, est caractérisé par la rapidité de l'action de l'agent morbide, et, lorsqu'il n'entraîne pas promptement la mort, il laisse quelquefois après lui des altérations dont j'aurai à m'occuper de quelques-unes, alors que j'examinerai l'impuissance consécutive.

En cette place, mon attention ne doit être acquise qu'à l'*impuissance-symptôme.*

A l'occasion du mot virus, que j'ai écrit plus haut, je n'entrerai pas dans une discussion stérile ici, sur l'existence, la nature, les propriétés, etc., des virus : je prends, je le répète, le mot intoxication dans son acception la plus large, soit que l'agent morbide tombe sous nos sens, comme l'arsenic, le plomb, etc., soit qu'il déjoue toute analyse, comme le virus syphilitique ; soit qu'il pénètre dans l'économie par la respiration, par les premières ou les secondes voies, etc.

1° *Intoxication syphilitique.*

L'action que le virus syphilitique exerce sur la fonction génitale, tantôt est limitée aux organes génitaux, et tantôt ne retentit sur eux qu'après avoir pénétré l'organisme tout entier.

Il ne peut être ici question de l'action purement locale qui m'occupera dans l'un des paragraphes suivants, et je ne dois m'arrêter, en cette place, qu'à l'imprégnation générale de l'économie.

L'intoxication syphilitique se manifeste sous des formes diverses dont la majeure partie a une importance à peu près nulle au point de vue qui m'occupe. Si l'on excepte, en effet, les exostoses intracrâniennes qui, par la compression qu'elles exercent sur le cerveau, troublent les facultés intellectuelles, amènent des paralysies soit générales, soit partielles, et, par suite, l'impuissance ; si l'on excepte encore, avec les accidents limités aux organes génitaux et dont j'ai remis à plus loin l'examen, la chlorose, dont parle M. Ricord, et la cachexie, dont je vais m'occuper, nous n'avons que faire de tous les accidents secondaires et tertiaires, adoptés par les syphiliographes.

Les faits de cachexie syphilitique ne sont pas rares, mais il en est bien peu qui attaquent profondément la fonction copulatrice ; quelquefois, il est vrai, le malade perd ses propriétés fécondantes, mais le sens génital est respecté dans ses désirs et dans son énergie.

Cependant il est des cas où la faculté copulatrice participe elle-même à l'altération générale, et je ne sais pas, sous ce rapport, d'exemple plus frappant que celui que M. Bourguignon, alors interne des hôpitaux, communiqua à l'Académie de médecine, le 12 juillet 1842.

Cette observation, excessivement curieuse, mérite de trouver place ici ; qu'on me permette de la transcrire en entier et dans toute son intégrité :

» Le nommé Prince (Charles), âgé de trente ans, est couché à l'hôpital des vénériens, dans la salle 8, lit 4, service de M. Puche.

» A vingt ans, en 1830, après trois jours d'un coït suspect, douleurs dans le canal de l'urèthre, plus vives dans l'excrétion des urines. Quatre jours après l'apparition de ces douleurs, une ulcération se montre au méat urinaire, et plusieurs autres, quelques jours après, à la base du gland. — Entrée à l'hôpital des vénériens. Traitement : injections d'un liquide caustique dans le canal de l'urèthre, suivies d'un bain de siége pendant quinze jours, jusqu'à cessation des douleurs ; charpie sèche sur les ulcères ; frictions mercurielles sur la partie interne des cuisses pendant vingt jours ; la salivation les fait supprimer ; cicatrisation et sortie de l'hôpital après deux mois de séjour.

» En 1832, uréthrite (Prince est entré au service, il va au Val-de-Grâce) : traitement émollient, puis antiblennorrhagique. — Guérison.

» En 1833, ulcère de l'impasse du prépuce. Traitement : onguent mercuriel, bains locaux avec solution d'acétate de plomb. Guérison en quatre jours ; mais une marche forcée amène une adénite volumineuse. — Entrée à l'hôpital. Traitement : ponction du bubon ; liqueur de Wan-Swieten à la dose d'une cuillerée à bouche pendant ving-quatre heures, jusqu'à salivation ; frictions mercurielles sur les cuisses quelques jours après. — Guérison. — Durée du traitement : soixante-trois jours.

» A la fin de 1833, mal à la gorge. — Traitement : gargarismes acidulés, tisane de Feltz, cautérisation de la gorge avec un pinceau trempé dans un acide. — Guérison après trois semaines de traitement.

» En 1835, après deux ans d'une santé parfaite (Prince est en garnison à Alger), nouvelle infection ; les ulcères siégent sur le corps du gland. Le malade les conserve trois semaines sans songer à les guérir. — Entrée à l'hôpital. Traitement : bains locaux, charpie avec onguent mercuriel ; prompte cicatrisation des ulcères. — Mais pendant le traitement, éruption de boutons sur le cuir chevelu ; des croûtes leur succèdent. Huit jours de frictions mercurielles, après avoir au préalable rasé la tête, en font justice.

» En 1836, réapparition de l'éruption pustuleuse ; d'abord bornée à la tête, elle gagne bientôt le tronc et les membres. — Entrée à l'hôpital. Traitement : frictions mercurielles de la tête aux pieds, pendant dix-huit jours ; tisane de salsepareille, pilules de 1 à 8 (le malade ne sait pas dire quelle était leur nature et pendant combien de temps il les a prises). — Guérison.

» En 1838, céphalalgie des plus vives, d'une activité extrême la nuit. — Entrée à l'hôpital du Dey. Traitement : vésicatoire à la nuque, vésicatoire monstre sur toute la tête ; leur effet est nul, et déjà commence pendant ce traitement l'étonnante transformation qui doit s'opérer chez Prince.

» Il était bien développé, vigoureux ; sa barbe était noire, longue et bien fournie, et cependant, au bout d'un mois, ses formes athlétiques ont disparu, ses membres sont chétifs et grêles ; sa barbe s'en est allée poil à poil ; ses favoris, ses moustaches ne laissent plus trace de leur existence. Le principe morbifique porte encore plus profondément son action destructive : Prince voit ses organes génitaux menacés d'une atrophie presque complète. Il en est des poils du pubis comme de ceux de la face ; ils tombent tous, sans exception. Sa verge, d'une dimension autrefois ordinaire, perd surtout de son volume, et ses bourses jadis grosses et pendantes, sont petites et fortement revenues sur elles-mêmes. Ce travail atrophique dure ainsi plusieurs mois, sans que la céphalalgie perde de son intensité ; elle ne cède qu'à l'application d'un moxa derrière l'oreille droite, au sixième mois environ.

» Délivré de ses douleurs céphaliques, Prince reprend des forces, et obtient son congé définitif à la fin de 1839 ; il revient à Paris, où sa santé s'améliore encore. Mais son étrange caractère, sa répulsion pour les plaisirs de son âge, contrastent d'une manière étrange avec ses antécédents. Chacun s'en étonne et le lui fait remarquer ; il le voit, il le comprend, veut prendre sur lui de se faire l'homme d'autrefois, et ses efforts ne lui font que mieux sentir son impuissance.

» Chose étrange ! quoique la convalescence et l'embonpoint se maintiennent, l'atrophie des organes génitaux n'en marche pas moins activement. Inquiet sur les suites de cette diminution progressive de ses organes sexuels, Prince se décide à faire l'épreuve de ses moyens, à constater ce qui lui reste de ses vertus prolifiques. Il se rend dans une maison publique, y rencontre une ancienne connaissance qu'il choisit de préférence, comme il le faisait dans des temps meilleurs. Mais aujourd'hui c'est pour un tout autre motif : il a besoin de sa discrétion, peut-être de sa complaisance. En effet sa nature lui fait complétement défaut ; une masturbation prolongée a pu seulement lui procurer une légère sensation voluptueuse sans la moindre éjaculation.

» Quelques mois se passent ainsi sans apporter de changement à son état ; mais au commencement de 1840, une tumeur lacrymale se montre à gauche ; de vives douleurs, plus intenses la nuit, se font sentir au niveau des os propres du nez ; enfin il rejette, au milieu du mucus nasal, des débris osseux, noirs, infects, sortant par la narine droite. — Tisane de Feltz ; guérison. — Durée du séjour à l'hôpital : deux mois.

» En octobre, même année 1840, la céphalalgie reparaît plus intense qu'elle n'a jamais été ; la tumeur lacrymale se montre de nouveau ; des exostoses se sont développées sur le front à droite et à gauche, ainsi que sur les os propres du nez, et sont le siége de douleurs lancinantes. — Entrée du malade à l'hôpital ; traitement : sangsues sur la tumeur lacrymale, tisane sudorifique, iodure de potassium (110 gr. dans l'espace de six semaines). Le malade sort notablement soulagé de ses douleurs ; les exostoses se sont affaissées.

» En 1841, après dix mois d'une santé passable, les exostoses déjà existantes reviennent à leur premier volume ; elles sont aussi douloureuses qu'autrefois. — Entrée à l'hôpital. Au dire du malade, Cullerier aurait fait remarquer aux élèves un ramollissement du frontal ; les doigts, en comprimant le front au niveau des exostoses, faisaient céder la table externe. Traitement : frictions d'onguent mercuriel sur le front, pilules de Vallet. Les accidents sont palliés pour huit mois, et c'est le 26 janvier 1842 qu'il entre à l'hôpital des Vénériens pour la cinquième fois, et toujours pour ses exostoses, et de plus pour des douleurs ostéocopes générales, plus prononcées la nuit. C'est alors que le malade s'est présenté à notre observation. — Disons un mot de son état général, en passant en revue les différents organes et leurs fonctions; cet examen est digne d'intérêt.

» Prince est d'une taille moyenne; il est bien développé; il était, dit-il, vigoureusement constitué; nous pouvons le croire : il était autrefois garçon de pharmacie à l'hôpital, et les infirmiers qui l'ont connu alors certifient qu'il était un fort *gaillard*. Quel changement aujourd'hui dans toute sa personne! Ses traits portent l'empreinte d'une vieillesse précoce; ils ont une douce expression où perce l'insouciance; son regard est craintif, sa démarche chancelante; ses mouvements lents et mesurés; il y a de la femme dans son allure. C'est qu'en effet il en a pris toutes les formes : la peau est d'une parfaite blancheur, douce au toucher; un léger duvet la recouvre à peine dans les régions où le système pileux était fort développé autrefois. Un tissu cellulaire abondant donne à tout son corps de gracieux contours; les extrémités supérieures et inférieures ont acquis des formes inconnues à notre sexe. La main, surtout chez un individu occupé plus d'une fois à de rudes travaux, a subi une transformation surprenante; l'artiste la trouverait irréprochable : à ne voir que le doigt, l'anatomiste nierait le sexe. Les organes génitaux sont aussi ceux d'un enfant de cinq ans : leur blancheur, leur forme, leur volume, tout le ferait croire. Le toucher perçoit deux apparences de testicules de la grosseur d'une petite noisette. La verge a peut-être proportionnellement éprouvé une atrophie moins considérable; le canal de l'urèthre a conservé en largeur les dimensions de celui de l'homme adulte; le méat urinaire de Prince est même plus large que chez beaucoup d'autres malades couchés dans la même salle que lui.

» Du reste, le moral s'est montré esclave du physique : en perdant les organes, il a perdu les fonctions. Son tempérament est le type du lymphatique; son caractère est fort doux, son intelligence obtuse, et la mémoire, fort bonne autrefois, est toujours très-infidèle. Les fonctions organiques n'offrent rien de particulier, seulement les liqueurs le mettent dans une excitation nerveuse remarquable. Deux verres de vin blanc, pris à différentes époques, lui ont donné des attaques épileptiformes. — Dans notre examen nous n'avons point oublié les organes de la voix ; leur corrélation avec les organes génitaux nous le rappelait suffisament ; mais la voix n'est que légèrement modifiée.

» Tel était l'état de Prince en janvier dernier. Aujourd'hui sa constitution s'est améliorée ; il semble se régénérer sous l'influence du traitement qu'il a suivi et que nous noterons en quelques mots. M. Puche lui fait prendre son sirop antisyphilitique composé, dont voici la formule :

Iodhydrargyrate neutre de potassium.	1	gramme.
Iode pur........................	1	—
Protoiodure de potassium.........	100	—
Eau distillée......................	398	—

pour 500 parties. — Dose du sirop de 25 à 100 grammes.

» Jusqu'à ce jour le malade en aurait pris au total environ 600 grammes. C'est en subordonnant le traitement aux symptômes, c'est en veillant surtout à l'alimentation du malade, que M. Puche est parvenu à arrêter les progrès effrayants de cet étiolement général. Aujourd'hui Prince est plus dispos, il se sent plus fort, il semble remonter peu à peu les degrés qu'il a descendus ; toutes ses douleurs ont disparu. Les fosses nasales sont le seul point en souffrance, et, là encore, la nature prend le dessus. En effet, la nécrose élimine de temps en temps de petites esquilles, et le malade s'en trouve mieux.

Notons cependant que l'apophyse montante de l'os maxillaire supérieur droit a presque entièrement disparu par suite de ces éliminations.

» Le léger duvet qui recouvrait les régions autrefois abondamment pourvues de barbe, devient plus touffu ; il noircit ; cela se voit surtout aux moustaches. Les organes génitaux eux-mêmes reviennent de leur inertie. Le mois dernier, Prince a eu deux érections ; ce sont les seules qu'il ait éprouvées depuis le jour de ses fameux exploits ; en un mot, notre malade marche incontestablement vers la conquête de la première nature.

» Nous n'avons rien dit de la chute des cheveux : le rasoir l'ayant plus d'une fois artificiellement produite, cet accident perdrait par ce fait beaucoup de sa valeur (1). »

Après cette intéressante communication, M. Bourguignon présenta à l'Académie le malade qui en était l'objet, et il fut facile de se convaincre de l'exactitude du récit que nous venons de rapporter.

Il n'entre pas dans mon sujet d'exposer les ressources qu'offre la thérapeutique contre la syphilis ; mais je dois noter, sans m'y appesantir, que le traitement de l'impuissance produite par le virus vénérien doit se confondre, comme dans l'observation précédente, avec la médication antisyphilitique elle-même.

2° *Intoxication saturnine.*

L'intoxication saturnine ne se produit que par suite de l'*absorption*, par les *membranes muqueuses*, de préparations de plomb sous *forme moléculaire*. « Le plomb, dit Orfila, n'est point vénéneux tant qu'il est *en masse ou en poudre*

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(1) *Bulletin de l'Académie de médecine.* Paris, 1842, t. VII, p. 974.

grossière, et qu'il ne se transforme pas dans le canal digestif en oxyde ou en sel (1). »

L'intoxication saturnine que l'on appelle *maladie de plomb*, revêt des formes caractérisées par des symptômes particuliers à chacune d'elles ; ces formes sont : la *colique*, l'*arthralgie*, la *paralysie*, l'*anesthésie* et l'*encéphalopathie saturnine*.

Qu'on ne s'attende pas à trouver ici la description de tous ces accidents ; contenu dans les limites de cet ouvrage, je ne dois qu'exposer l'état des organes génitaux pendant l'intoxication saturnine.

A cet effet, Tanquerel des Planches, qui a porté sur la maladie de plomb une attention toute spéciale, va nous faire le tableau des désordres qui se passent dans les organes de la génération : « Nous avons déjà parlé, dit-il, des douleurs qui attaquent quelquefois les organes génitaux. Les testicules, le cordon spermatique, la verge, l'utérus, le vagin et les seins, peuvent en être le siége. Ces douleurs font éprouver une sensation de tiraillement, de dilacération et de constriction.

» Le plus souvent, la douleur occupe les deux testicules à la fois ; très-rarement, un seul d'entre eux se trouve affecté. Mais plusieurs fois nous avons observé que l'un était plus douloureux que l'autre. Le plus ordinairement, lorsque la douleur est forte, il y a en même temps rétraction de ces organes vers l'aine au moment de ces exacerbations. Si le gauche se trouve seul endolori, il vient occuper une position plus rapprochée de l'anneau que celui du côté droit, ce qui est l'inverse de la disposition normale. La compression diminue assez souvent la douleur ; aussi plusieurs malades serrent avec les mains leurs testicules ou les soutiennent ; presque toujours la suspension produit en effet le même résultat. Quelquefois aussi le scrotum se ride au moment des accès de douleurs, et se relâche pendant la rémission. Je n'ai jamais observé de rougeur ou de tuméfaction des testicules devenus douloureux.

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(1) Orfila, *Traité de toxicologie*, 5^e édit. t. I, p. 822

» Dans sept cas, nous avons constaté que la douleur siégeait à la base de la verge; toute l'étendue de cet organe était douloureuse chez vingt-quatre malades. Nous avons déjà parlé de la rétraction du pénis; lorsqu'il se trouve retiré sur lui-même, il est comme caché dans la peau du scrotum quand celui-ci n'est pas contracté. *Les désirs vénériens paraissent anéantis, et nous n'avons* JAMAIS *observé d'érection ni d'évacuation de sperme* pendant les plus violents accès de douleur, même lorsque les testicules étaient fortement tirés vers l'anneau inguinal.

» Plusieurs fois il nous a semblé que la douleur occupait le trajet du cordon spermatique, et qu'elle remontait vers l'aine (1). »

L'impuissance que signale Tanquerel des Planches peut se montrer avec toutes les formes de l'intoxication saturnine. J'ai connu un malheureux atteint d'arthralgie, par suite de l'usage d'une bière qui avait fermenté dans des vases de plomb, et qui, pendant tout le temps que dura son intoxication, même alors qu'il était en convalescence, fut incapable d'exercer le coït. Un de nos confrères, qui me l'a rapporté lui-même, éprouva la même impossibilité pendant un temps assez long qu'il subit l'influence saturnine.

Il est nécessaire de rappeler ici les professions qui exposent à l'intoxication dont je parle, car dans quelques circonstances, alors que les accidents toxiques sont peu prononcés, elles peuvent mettre sur la voie de la cause de l'impuissance.

Ces professions sont :

Ouvriers cérusiers, ouvriers des fabriques de minium, de fabriques de litharge, peintres en bâtiments, peintres d'attributs, de voitures, doreurs sur bois, vernisseurs de métaux, fabricants de papiers peints, broyeurs de couleurs, fabricants de cartes d'Allemagne, ceinturonniers, potiers, faïenciers, verriers, ouvriers des mines de plomb, affineurs, plombiers, fondeurs de cuivre, fondeurs de bronze, fondeurs de caractères d'imprimerie, imprimeurs, fabricants de plomb de chasse, lapidaires, tailleurs de cristaux, ouvriers des manufactures de glaces, ouvriers des fabriques de nitrate, de chromate, d'acétate de plomb.

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(1) Tanquerel des Planches, *Traité des maladies de plomb*. Paris. 1839, t. I, p. 222.

Quand l'absorption du plomb est la cause de l'impuissance, celle-ci n'exige pas d'autre traitement que celui de l'intoxication saturnine dont je ne dois point m'occuper ici, et pour laquelle je renvoie le lecteur aux traités spéciaux sur la matière.

3° *Intoxication antimoniale.*

Dans son *Traité de toxicologie*, en parlant de l'action des vapeurs antimoniales, Orfila s'exprime ainsi : « M. Lohmerer a vu quatre individus qui étaient fréquemment exposés à des émanations antimoniales dans un établissement où l'on préparait en grand du tartre stibié, du beurre et du verre antimoniés, où l'on fondait de la poudre d'Algaroth, et où il se dégageait surtout des vapeurs d'acide antimonieux, d'acide antimonique et de chlorure d'antimoine. Il a observé les symptômes suivants : douleurs de tête, difficulté de respirer, point de côté et douleur pongitive dans le dos ; râle muqueux et sifflement dans la poitrine, expectoration difficile de quelques grumeaux tenaces ; insomnie, sueurs abondantes et abattement général ; anorexie, diarrhée, dysurie avec écoulement de mucosités causant un sentiment de brûlure dans l'urèthre ; *flaccidité de la verge*, *dégoût du coït*, *impuissance complète ;* pustules sur différentes parties du corps, mais principalement sur les cuisses et sur le scrotum ; *douleurs dans les testicules, atrophie de ces organes ainsi que du pénis* (1). »

Mais Orfila ajoute :

« Il n'est pas douteux que l'action prolongée de ces vapeurs ne puisse amener la mort ; mais il n'est pas encore démontré que les accidents dont il vient d'être fait mention ne soient dus, en partie du moins, aux vapeurs *arsénicales* que fournissent la plupart des antimoines du commerce, lorsqu'ils sont chauffés ou traités par quelques agents énergiques (2). »

D'après M. Lohmerer, l'intoxication antimoniale, et, par suite, l'impuissance qu'elle produit, doivent être combattues par les antiphlogistiques, le lait, et plus tard par l'opium, le tannin, et surtout le quinquina à l'intérieur et en lotion.

4° *Intoxication arsenicale.*

On vient de voir qu'Orfila met l'impuissance au nombre des phénomènes qui accompagnent la respiration des vapeurs arsenicales.

Cependant tous les auteurs ne sont point de cette opinion, et plusieurs même assurent que l'arsenic soutient la fonction génitale : Muller lui attribue cette propriété quand l'arsenic est longtemps continué à petites doses, tandis qu'à des doses plus élevées il acquiert une propriété contraire, c'est-à-dire déprimante. M. Devergie a vu une excitation génésique chez une jeune fille qui prenait de l'arsenic pour une maladie herpétique ; enfin M. Delioux de Savignac pense que 2 ou 3 milligrammes d'acide arsénieux déterminent un chatouillement de l'urèthre avec tendance à l'érection et à un véritable éréthisme génital.

Mais, d'un autre côté, on fournit des faits qui prouvent que l'impuissance fait partie du cortége de l'arsénicisme. Rayer et Biett en ont, chacun, rapporté un exemple, et M. Charcot en a publié deux cas dans le *Bulletin de thérapeutique*.

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(1) *Journal de chimie médicale*, année 1840, p. 629.

(2) Orfila, *Traité de toxicologie*, t. I, p. 650 et 651.

Sans doute l'impuissance amenée par l'usage de quelque préparation arsenicale est rare ; mais il suffit qu'elle puisse se produire et qu'elle ait été observée pour que j'eusse le devoir de consigner cette action de l'arsenic et de ses composés.

5° *Intoxication par le sulfure de carbone.*

C'est à M. Delpech, médecin distingué de l'hôpital Necker, que nous devons la connaissance de l'action toxique du sulfure de carbone sur les organes génitaux ; il lui a consacré deux mémoires intéressants d'où je vais extraire ce qui suit :

Dans la première période de l'empoisonnement, les fonctions génératrices sont fortement surexcitées d'une manière le plus souvent passagère et fugace ; ce n'est que dans la seconde phase que l'anaphrodisie se montre complète, c'est-à-dire avec absence de désirs vénériens et impossibilité d'érection. « C'est là, dit M. Delpech, l'un des caractères les plus formels de l'action du sulfure de carbone, seul ou additionné de chlorure de soufre ; et dans les ateliers il n'est mis en doute par personne. » (*Nouvelles recherches sur l'intoxication spéciale que détermine le sulfure du carbone*, p. 24).

L'intoxication par le sulfure de carbone a, sur le sens génital, une action analogue à celle que nous avons notée pour la castration avant ou après la puberté : « lorsque cette action dépressive s'exerce chez des adultes, dit M. Delpech, on peut avec le temps et par un traitement convenable, en faire disparaître le plus souvent, en totalité ou en partie, les conséquences ; mais celles-ci sont beaucoup plus graves chez les sujets exposés de très-bonne heure à l'action du sulfure de carbone » et l'analogie entre l'action du sulfure de carbone et la castration est d'autant plus réelle que l'une et l'autre agissent sur les organes testiculaires, la première par l'atrophie, et la seconde par l'ablation des testicules.

Quoi qu'il en soit, le médicament qui a le mieux réussi à M. Delpech pour dissiper les phénomènes d'intoxication sulfo-carbonée, est le phosphore à la dose de 1 à 3 milligrammes par jour; cet agent agit-il comme stimulant ou remplace-t-il les graisses phosphorées dont le sulfure de carbone a dépouillé la substance cérébrale? On ne sait, mais toujours est-il que le phosphore, soit en pilules, soit incorporé à des huiles, semble le spécifique de l'intoxication dont sont atteints les ouvriers qui travaillent le caoutchouc soufflé.

6° *Intoxication iodique*

Comme tous les agents actifs de la matière médicale, l'iode a été loué et attaqué outre mesure. Parmi les reproches qu'on lui a adressés, les accidents du côté du système nerveux et la fonte des glandes, par conséquent celle des testicules, sont les plus graves; comme ses partisans ne pouvaient nier ces faits, ils ont prétendu que ces accidents étaient excessivement rares, et que « c'est à peine si un médecin, dans le cours d'une longue pratique, a l'occasion d'observer un ou deux faits de ce genre (1). »

Je ne sais jusqu'à quel point on peut et l'on doit partager la confiance des partisans de l'iode, car il m'a été donné, dans l'espace de moins de dix-huit mois, d'observer quatre cas d'impuissance, avec atrophie plus ou moins considérable des testicules, survenant pendant ou immédiatement après le traitement de la phthisie pulmonaire par l'absorption des vapeurs d'iode.

Chez l'un de ces quatre malades, malgré l'impossibilité de l'érection de la verge, les désirs vénériens étaient conservés et les testicules avaient leur volume à peu près normal. Chez les trois autres, qui offraient une bien évidente atrophie des testicules, l'indifférence pour le coït était assez marquée pour ne leur pas faire regretter les voluptés perdues, et ils ne venaient réclamer mes soins que pour satisfaire soit le devoir conjugal, soit le désir d'avoir un enfant.

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(1) Trousseau et Pidoux, *Traité de thérapeutique et de matière médicale*, 9ᵉ édit. Paris, 1875, t. I, p. 324.

D'autres composés d'iode, sans avoir une action aussi délétère que celle des vapeurs de cette substance, n'en agissent pas moins sur les organes génitaux. Un de mes amis qui, à la suite d'accidents syphilitiques assez graves, avait pris l'habitude d'user, au printemps et en automne, de l'iodure de potassium à dose dépurative, m'a avoué que, pendant tout le temps qu'il faisait usage de ce médicament, il était moins porté vers les plaisirs de l'amour et perdait sensiblement de son énergie virile.

Au moment où j'écris ces lignes, un de mes malades, dans toute la force de l'âge, à qui je fais prendre du protoiodure de mercure contre des accidents secondaires de la syphilis, m'a accusé une certaine défaillance dans sa virilité et une froideur pour les plaisirs vénériens, qui ont porté le trouble dans son imagination.

Dans les deux cas que je viens de citer, il est impossible d'attribuer à la syphilis les accidents qu'éprouve le sens génital, car il n'existe ni cachexie vénérienne ni désordre local qui les puissent expliquer.

Quand l'action de l'iode se traduit simplement par une diminution dans les forces génitales, sans atrophie des testicules, il suffit ordinairement de suspendre l'emploi du médicament pour voir revenir les choses à leur état normal.

Quand les testicules sont entièrement atrophiés, la médecine doit déclarer son incompétence ; elle ne peut refaire des organes perdus.

Mais il est rare que l'intoxication iodique atteigne ces limites extrêmes du côté des organes génitaux, avant d'avoir produit des désordres graves du côté de quelque organe important à la vie, de telle sorte que l'on a presque toujours affaire à une atrophie incomplète des glandes spermatiques, quand un malade réclame des soins contre l'impuissance,

Dans ce cas, un régime analeptique, le séjour à la campagne et l'exercice au grand air, sont de toute nécessité, et font la base de la médication. Plus tard, et si aucun trouble n'existe du côté du tube digestif, les martiaux et le quinquina peuvent rendre des services; mais, je le répète, il faut, avant toute chose, s'attacher à un régime reconfortant, et ne recourir que plus tard aux agents médicamenteux proprement dits.

7° *Intoxication alcoolique.*

Quand on connaît l'action toxique de l'alcool sur le système cérébro-spinal, on est porté à croire que l'intoxication alcoolique doit exercer une action fâcheuse sur les facultés intellectuelles, sur la sensibilité et la motilité générales, et par suite sur le concensus érotique, sur la sensibilité et la motilité de l'appareil générateur.

Cependant quand on lit attentivement tous les travaux qui, depuis quelques années, se sont succédé sur cette question, on cherche vainement à grouper un ensemble de symptômes qui fasse de l'alcoolisme une entité morbide.

Je ne veux pas dire, Dieu me garde ! que l'abus des liqueurs fermentées soit sans inconvénients et sans périls; au contraire, il constitue un danger réel contre lequel on ne saurait trop réagir, même au point de vue qui nous occupe.

L'alcoolisme, soit aigu, soit chronique, n'a point une physionomie propre et distincte qui lui mérite une place dans la classification des maladies; ses symptômes n'ont point un caractère général qui s'impose; ils sont toujours individuels ;

c'est-à-dire variables et changeants avec chaque sujet d'observation.

Il n'en peut être autrement, puisque, je le répète, l'alcoolisme ne constitue pas par lui-même une entité morbide, ainsi qu'il ressort, je le dis encore, des nombreux travaux publiés sur la question.

Mais si l'alcoolisme ne peut être considéré comme un état pathologique distinct, il est un danger réel pour les états morbides en germe ou en éclosion.

Je m'explique en prenant mes exemples dans le sujet même de ce livre.

Si un individu est atteint de ce que j'ai précédemment appelé une impuissance idiopathique native, c'est-à-dire d'une faiblesse naturelle de l'appareil copulateur, l'abus des liqueurs fermentées, incapable d'amener par lui-même l'impuissance, accroîtra cette disposition native et rendra le coït impossible, alors que sans lui il eût été quelquefois praticable.

Autre exemple :

Un individu a une préoccupation, n'importe laquelle, de travail intellectuel, d'ambition de fortune, contraire, on le sait, aux pensées d'amour; sous l'influence de l'alcoolisme cette préoccupation va s'accroître et l'indifférence génitale sera augmentée au point que les désirs seront éteints et que le coït sera impossible.

C'est dans cette aggravation des dispositions morbides individuelles que réside le danger des liqueurs fortes.

Au contraire, si un individu a une grande propension pour les femmes, l'alcoolisme accentuera d'avantage encore cet instinct et cette force virile, et le malade montrera, comme dans quelques observations, une lubricité allant même jusqu'au satyriasis.

Il n'est donc pas exact de dire que l'abus des liqueurs fermentées amène par lui-même l'impuissance et la stérilité, pas plus que les troubles de la vue, de l'ouïe et des autres sens.

Cet article trouve son excuse, non dans la place que je lui donne, puisque je conteste à l'intoxication alcoolique d'être une cause d'impuissance, mais dans le besoin de réagir contre des banalités sans fondement, comme je le ferai à l'endroit de tous les préjugés et de toutes les erreurs dont notre sujet fourmille.

8° *Intoxication médicamenteuse.*

Ceux qui reconnaissent à certains agents des propriétés *excitantes* spécifiques à l'appareil génital, sont naturellement conduits à trouver à d'autres agents des propriétés essentiellement contraires, et à admettre l'existence de médicaments *qui domptent l'amour.*

Les anciens avaient une foi égale aux *aphrodisiaques* et aux *anaphrodisiaques;* parmi ces derniers le nénuphar, l'agnus-castus, le camphre, le nitre, la mandragore, le datura etc., occupaient la première place; il est vrai que les commentateurs n'étaient pas toujours d'accord, et que la même substance, l'opium, le camphre, le nitre, par exemple, figuraient alternativement parmi les remèdes capables d'exciter ou d'amortir l'orgasme vénérien; l'esprit reste confondu quand on lit toutes les fables débitées sérieusement par Dioscoride, Matthiole et surtout Arnaud de Villeneuve.

Heureusement la science aujourd'hui ne se contente plus de ces histoires où le merveilleux jouait le principal rôle, et, moins crédule qu'autrefois, elle n'admet que des observations exactes et des expériences positives.

Or, l'observation et l'expérience de tous les jours prouvent qu'aucun agent n'a une *action spécifique* sur l'appareil génital, soit pour l'éveiller soit pour l'endormir, et que la matière médicale ne possède aucun remède auquel on puisse rigoureusement donner le nom d'*aphrodisiaque* ou d'*anaphrodisiaque.*

Mais pour n'avoir pas un spécifique, la médecine n'est pas désarmée et trouve dans la thérapeutique et l'hygiène les éléments de médications tour à tour aphrodisiaque et anaphrodisiaque.

Sans doute l'innervation ou la circulation de l'appareil génital sont modifiées par certains agents ; mais elles le sont au même titre que les autres fonctions de l'économie, soit primitivement si le remède est local, soit secondairement si le médicament est donné par les premières voies.

Les onctions, les frictions, les suppositoires, les lavements, etc., avec des antispasmodiques et des narcotiques, agissent sur l'innervation génitale comme sur tous les autres points du système nerveux où ils sont appliqués ; de même les émollients pour la circulation.

Les sédatifs généraux tels que les bromures, le chloral, le haschich, les narcotiques, l'opium, la belladone, le datura etc., portent sur l'innervation génitale l'action qu'ils exercent sur toutes les autres parties du système nerveux ; de même que le nitre, la digitale, l'aconit, les boissons délayantes, secondés par la diète et un régime végétal, ralentissent la circulation génitale, parce que la circulation générale est elle-même ralentie.

Il est vrai que ces agents peuvent amener l'impuissance si leur usage est continué longtemps, comme il arrive chez les orientaux, mangeurs d'opium ou de haschich ; mais dans ces cas on a affaire à une impuissance consécutive à des abus dont l'examen doit m'occuper plus loin.

§ V. — D'une affection de l'appareil génito-urinaire.

Il eût été plus logique d'examiner séparément les maladies des organes urinaires et celles des organes génitaux ; mais si l'on réfléchit que ces deux appareils ont les rapports les plus intimes de voisinage, on conviendra qu'il était difficile de les séparer dans un examen pathologique ; cette nécessité de les comprendre dans le même cadre ressortira bien manifestement à l'occasion des maladies de la prostate et du canal de l'urèthre.

J'aurai donc à passer en revue, sous le rapport de l'impuissance :

1° Les maladies des reins, des bassinets et des uretères ;
2° Les maladies de la vessie ;
3° Les maladies du col de la vessie et de la prostate ;
4° Les maladies des vésicules séminales et des conduits éjaculateurs ;
5° Les maladies du canal de l'urèthre ;
6° Les maladies de la verge ;
7° Les maladies du cordon spermatique et des testicules.

1° *Maladies des reins, des bassinets et des uretères.*

Diabète. — J'ai trop soutenu ailleurs (1) que le diabète était une manifestation de la diathèse urique, pour mettre le siége de cette affection dans l'appareil urinaire ; mais pour la facilité du discours et à l'ombre d'une convention que le lecteur voudra bien admettre, je fais ici abstraction des théories de Claude Bernard, de Marchal (de Calvi) de Mialhe, de Bouchardat et des miennes, et je laisse le diabète dans le cadre nosologique de l'appareil qui lui sert d'émonctoire.

Sans m'occuper, je le répète, de la nature du diabète, je veux établir la relation existant entre les troubles de la fonction génératrice et les altérations de la sécrétion rénane, c'est-à-dire entre l'impuissance et la présence du sucre dans les urines.

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(1) Roubaud, *Identité d'origine de la gravelle, de la goutte, du diabète et de l'albuminurie,* mémoire présenté à l'Académie des sciences, 1864.

« *Les fonctions génératrices*, dit Valleix à l'article *Glucosurie*, sont profondément troublées. Les érections n'ont plus lieu ; il n'y a plus de désirs vénériens ; parfois même, si l'on en croit quelques auteurs, le testicule s'atrophie et le scrotum devient flasque. Suivant M. Elliotson, cet état s'observerait neuf fois sur dix ; mais il eût été nécessaire de dire si les malades avaient été interrogés à ce sujet à toutes les époques de leur maladie ; car cette altération des fonctions génératrices, qui a été remarquée par tous les observateurs, ne survient que graduellement, et l'on conçoit très-bien qu'à une époque rapprochée du début, elle peut être très-faible et peu appréciable. Le même auteur a noté que la sécrétion du sperme cessait de se faire (1). »

Je vais essayer de suppléer au silence dont se plaint Valleix.

Le diabète, outre les symptômes relatifs au produit urinaire, présente comme phénomène général et constant une diminution notable, et même la suppression entière de toutes les sécrétions, à ce point qu'il semble que le *système urinaire attire en quelque sorte à lui seul la plus grande partie des humeurs qui devraient avoir une direction différente*. Ainsi la respiration cutanée est suspendue et la peau présente une surface écailleuse, sèche et aride ; la sécrétion des larmes, celle de la salive, éprouvent une diminution notable, et Dupuytren et Thénard ont même observé que d'anciens ulcères aux jambes discontinuaient de suppurer et se séchaient spontanément.

Bien évidemment, la sécrétion spermatique n'est pas seule épargnée au milieu des troubles qui atteignent toutes les autres sécrétions, et l'observation de M. Elliotson sur la cessation de la fonction testiculaire est parfaitement exacte.

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(1) Valleix, *Guide du médecin praticien*, 5e édit., par le docteur Lorain. Paris, 1866, t. I, p. 610.

La sécrétion du sperme, sauf dans quelques rares exceptions, est, comme nous le verrons plus loin, une des conditions de la virilité ; par conséquent, cette sécrétion venant à diminuer d'une manière notable et même à cesser complétement, la puissance virile doit décroître et même s'anéantir entièrement.

Entre ces deux faits, c'est-à-dire la virilité et la sécrétion spermatique, il existe une telle corrélation que l'on peut juger de l'énergie de l'une par la nature de l'autre. Un sperme abondant, normal et bien lié est toujours l'indice d'une grande force copulatrice; je ne dis pas une *éjaculation abondante*, qu'on le remarque bien, parce qu'au produit de l'éjaculation se trouvent mêlés des fluides bien différents du sperme

Il s'agit donc de savoir, pour marquer le commencement de la décadence virile, quand la sécrétion spermatique diminue d'une manière assez notable ou cesse de se faire.

Évidemment, le moment précis de cette diminution ou de cette suspension ne peut être noté; mais tout porte à croire qu'elle suit la marche des autres sécrétions, ainsi qu'il paraît résulter de la remarquable observation, communiquée à l'Académie de médecine par MM. Mialhe et Contour (1), et avec laquelle concordent la plupart des faits que j'ai moi-même observés. Chez le malade de ces deux auteurs, l'anéantissement de la force virile n'avait pas attendu, pour se produire, l'amaigrissement et le marasme; l'impuissance s'était montrée quelques mois à peine après la diminution des sécrétions, et comme rien ne décelait la continuation de la sécrétion spermatique, il est permis d'admettre que les testicules avaient suivi l'exemple des glandes lacrymales, salivaires, etc., etc., et que cette inaction avait enchaîné l'exercice de la virilité.

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(1) *Bulletin de l'Académie de médecine*, juillet 1844, t. IX, p. 977.

Plusieurs observations recueillies par moi-même, comme je le disais plus haut, m'autorisent à croire que les choses se passent réellement ainsi, c'est-à-dire que ce n'est point à la faiblesse générale qu'il faut rapporter l'impuissance des diabétiques, puisque cette impuissance se montre bien avant le marasme, mais plutôt à la suppression de la sécrétion testiculaire dont l'existence, concordant avec l'anéantissement ou la très-grande diminution des autres sécrétions, est attestée par l'absence des désirs vénériens, des pollutions, etc., etc.

D'après ces données, et en admettant, avec tous les auteurs, trois périodes dans le diabète, le début de l'anaphrodisie doit être placé dans la seconde période, la première étant remplie par le développement de la cause qui produit la suspension de la virilité. — C'est ce que l'observation prouve en effet.

Mais comme le diabète n'a rien de fixe dans sa marche, que sa durée varie de quelques mois à plusieurs années, chaque période met, à parcourir ses phases, un temps qu'il est impossible de déterminer; on ne peut donc préciser d'une manière absolue l'époque de l'apparition de l'impuissance à partir du début de la maladie; mais on peut dire que l'anaphrodisie apparaît d'autant plus tardivement que la marche des phénomènes morbides est plus lente et les sécrétions moins taries, et qu'elle se montre d'autant plus tôt que l'évolution de la première période a été plus rapide.

La durée de l'impuissance diabétique est entièrement subordonnée à la persistance de la maladie principale; c'est avouer qu'aucun traitement spécial n'est ici nécessaire. Dans l'observation rapportée par MM. Mialhe et Contour, le traitement par les alcalins que ces auteurs préconisent contre la glucosurie suffit, au bout d'un mois et demi environ, à triompher tout à la fois du diabète et de l'impuissance. Quel que soit donc le mode de traitement que l'on adopte, celui de Rollo, celui de

M. Bouchardat (1), celui de M. Mialhe, etc., on ne s'adressera jamais spécialement aux organes de la génération, et, plus qu'ailleurs peut-être, on se gardera de faire une médecine de symptômes.

2° *Maladies de la vessie.*

Depuis quelques années, mais surtout depuis les travaux de Civiale (2), on a apporté une distinction nécessaire entre les affections du col de la vessie et celles du corps de cet organe. Cette séparation m'est, plus qu'à tout autre, indispensable. Si l'on réfléchit qu'au col de la vessie se trouvent réunis la prostate, l'orifice du canal de l'urèthre et l'ouverture des canaux éjaculateurs, on comprendra le retentissement que doivent avoir sur les fonctions génitales les maladies de cette portion de l'appareil urinaire; tandis que le corps de la vessie, relégué dans la cavité pelvienne, sans communication directe avec les organes spermatiques, et n'ayant avec les vésicules séminales que des rapports de juxtaposition, ne peut exercer par ses états morbides une influence directement spéciale sur les fonctions reproductrices. Seulement, les altérations dont le réservoir urinaire peut être atteint sont rarement limitées au corps de l'organe; elles envahissent assez souvent le col et retentissent ainsi secondairement sur les voies génitales.

Il en est de même d'un calcul dans la vessie qui sollicite le malade à exercer des tractions sur la verge. Ces tractions ont quelquefois pour résultat une hypertrophie molle et flasque tantôt du prépuce et tantôt du pénis tout entier ; de telle sorte que les rapports d'harmonie entre l'organe mâle et l'organe de la femme peuvent être rompus, et cette disproportion amener une impuissance relative. Tous les auteurs qui ont écrit sur la présence de la pierre dans la vessie ont noté l'hypertrophie de la verge chez les calculeux, et je reproduirai tout à l'heure ce que Civiale a dit sur ce sujet.

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(1) Bouchardat, *Du diabète sucré, ou glucosurie, son traitement hygiénique*. Paris, 1851, in-4.

(2) Civiale, *Traité pratique des maladies des organes génito-urinaires*.

Mais il est un état anormal de la vessie que je dois signaler ici, parce qu'il est le seul capable d'amener l'impuissance.

Je veux parler de la cystocèle inguinale.

La hernie inguinale de la vessie s'oppose de deux manières à l'accomplissement du coït : 1° par la tumeur qu'elle forme au pubis ; 2° par la rétraction de la verge.

S'il n'existait que le premier empêchement à la copulation, on pourrait dire que l'impuissance ne serait pas continue, puisque l'évacuation de l'urine, en affaissant les parois vésicales herniées, fait disparaître la tumeur.

Mais la rétraction de la vierge est un obstacle qui est lié à l'existence même de la cystocèle, et qu'il n'est pas possible, par conséquent, de faire disparaître à volonté.

On conçoit, en effet, que le corps de la vessie, entraîné au dehors du canal inguinal, exerce des tractions sur les parties qui lui sont attenantes, et attire son col, et, par suite, le canal de l'urèthre, en haut et en dedans. La longueur du pénis est donc diminuée dans des proportions assez sensibles, et cette diminution est encore aggravée par la tumeur de la cystocèle elle-même. La verge, chez les personnes atteintes de cette infirmité, cachée sous l'arcade du pubis, apparaît comme un tubercule au milieu des tissus et des poils qui l'environnent, et ne peut, même par l'érection, dépasser les éminences qui la dominent, surtout quand la cystocèle est compliquée, ainsi qu'il arrive fréquemment, d'une hernie intestinale ou épiploïque.

Bien évidemment, cet obstacle mécanique se produit principalement dans la cystocèle complète, c'est-à-dire lorsque les parois antérieure et postérieure de la vessie se trouvent simultanément engagées dans l'anneau, et, à plus forte raison, dans la cystocèle double, dont il n'existe qu'une seule observation, je crois, rapportée par Verdier (1).

La réduction de la hernie est, on le comprend, le seul remède à l'impuissance que ce déplacement occasionne, et je renvoie pour le mode opératoire aux ouvrages spéciaux sur la matière.

3° *Maladies du col de la vessie, de la prostate et des conduits éjaculateurs.*

En dehors de l'obstacle que les altérations de la prostate apportent à la sortie régulière du sperme, et qui sera l'objet d'un examen étendu, alors que je rechercherai les causes de la stérilité, les affections profondes du col de la vessie et de la prostate déterminent un développement considérable de la verge qui, à lui seul, peut constituer une impuissance relative.

Cette hypertrophie, qui se montre aussi chez les calculeux à la suite des tractions que ceux-ci exercent sur leur verge, et chez les individus atteints de rétrécissements de l'urèthre, par une action purement sympathique, m'occupera tout à l'heure d'une manière spéciale.

Les conduits éjaculateurs, logés dans l'épaisseur de la prostate, restent rarement étrangers aux altérations de cet organe ; les vésicules séminales jouissent, à leur tour, quoique moins souvent cependant que les conduits éjaculateurs, de ce triste privilége, de telle sorte que l'étude de toutes ces affections doit se trouver dans le même cadre et ne former qu'un seul tableau.

Mais, en réfléchissant aux conséquences qu'elles entraînent, on ne tarde pas à s'apercevoir que, tout en déterminant l'impuissance dans la large acception que nous avons donnée à ce mot, ces affections, telles, par exemple, que l'hypertrophie de la prostate et surtout du verumontanum, la spermatorrhée etc., se traduisent principalement, tantôt par un obstacle à l'excrétion normale du sperme, et tantôt par une altération dans la nature de ce liquide, circonstances qui ont pour résultat immédiat et certain la stérilité.

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(1) Verdier, *Mémoires de l'Académie de chirurgie*, t. II, p. 32.

Je crois donc plus rationnel et plus utile tout à la fois de renvoyer l'histoire de ces maladies à la partie de cet ouvrage consacrée à la stérilité chez l'homme, me réservant de compléter alors la portion du cadre de l'impuissance que je néglige de remplir ici.

4° *Maladies des vésicules séminales.*

Les maladies des vésicules séminales capables d'entraîner l'impuissance, ont pour caractère commun la sortie involontaire du sperme, ce qui les a fait classer sous le titre unique de *spermatorrhée.*

Les causes de la spermatorrhée sont multiples et diverses, mais parmi elles les excès vénériens jouent incontestablement un rôle considérable. Or, comme j'ai à m'étendre longuement sur l'influence fâcheuse que ces excès ont sur la faculté copulatrice, je renvoie l'étude de la spermatorrhée, en tant que source de l'impuissance, au paragraphe relatif à l'action des abus des organes génitaux, afin d'embrasser dans leur ensemble les résultats néfastes de cette cause si commune d'anaphrodisie.

5° *Maladies de l'urèthre.*

Toutes les maladies qui affectent spécialement l'urèthre diminuent plus ou moins le calibre de ce canal, de telle sorte que, ramenées au point de vue qui nous occupe, elles rentrent toutes, par quelques points importants de leur histoire, dans la famille des rétrécissements.

Ceux-ci constituent une cause fréquente de stérilité chez l'homme, en mettant obstacle à la libre sortie du sperme;

leur étude, comme celle des affections de la prostate, des vésicules séminales et des conduits éjaculateurs, trouve donc sa place dans la seconde partie de cet ouvrage.

Cependant ils ne sont pas sans exercer une influence fâcheuse sur la fonction copulatrice, et, comme cette influence est entièrement distincte de celle qu'ils ont sur le cours de la semence, je vais l'exposer ici pour n'avoir plus à y revenir plus tard.

Les rétrécissements du canal de l'urèthre agissent sur la fonction copulatrice en altérant, soit les conditions anatomiques de la verge, soit les conditions physiologiques de l'érection.

Sous le premier rapport, la tuméfaction du prépuce est un accident que l'on rencontre assez fréquemment, et qui n'a rien de commun avec la tuméfaction produite par l'infiltration de l'urine. La plupart des auteurs qui ont écrit sur les rétrécissements de l'urèthre, prennent soin d'avertir de l'erreur dans laquelle on serait tombé, s'il en faut croire Ch. Bell, et Civiale fait ainsi ressortir toute l'importance de cette distinction : « Au commencement de 1841, dit-il, il s'est présenté dans le service des calculeux deux malades affectés de rétrécissement et de grandes difficultés d'uriner, qui avaient l'extrémité de la verge très dure et très-volumineuse. Chez l'un d'eux, l'induration occupait le gland et le prépuce, dans l'étendue de treize lignes environ ; elle était la conséquence d'un rétrécissement fort long et très-ancien, que je fus obligé d'inciser profondément, à plusieurs reprises. Chez l'autre, le gonflement énorme du prépuce, avec induration extrême, se rattachait à une véritable infiltration d'urine et à des fistules (1). »

La cause de cette tuméfaction n'est pas connue ; c'est un effet sympathique du rétrécissement.

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(1) Civiale, *Traité pratique sur les maladies des organes génito-urinaires*. 3ᵉ édit. Paris, 1858, 1ʳᵉ partie, p. 121.

Le prépuce n'est pas toujours seul à éprouver cette hypertrophie : la verge tout entière peut augmenter de volume, et cet accroissement du pénis, qu'il faut bien distinguer de ceux que produisent l'onanisme ou les tractions exercées par le malade dans le cas d'un calcul vésical, est tout aussi inexplicable que la tuméfaction du prépuce. Écoutons encore sur ce sujet un des hommes les plus compétents en fait de maladies de l'urèthre : « On trouve, dit Civiale, quelques malades chez lesquels le pénis prend un développement extraordinaire. Presque toujours alors il y a des lésions profondes, soit de la prostate, soit de la vessie. On se rend difficilement raison de cette influence, mais elle existe ; j'ai eu occasion de l'observer chez un certain nombre de malades, et Charles Bell en a fait le sujet d'une de ses belles planches sur les affections des organes génitaux. Il faut bien distinguer cet état de celui qui a pu être déterminé par la masturbation ou par les tractions que la plupart des calculeux ont coutume d'exercer sur leur verge. Ce développement anormal du pénis m'a paru se lier essentiellement aux efforts prolongés et longtemps continués que les malades exécutent pour chasser l'urine de leur vessie. Ce qui vient à l'appui de cette opinion, c'est qu'on observe le même phénomène chez certains calculeux qui se sont livrés pendant longtemps à des efforts analogues, dont la prostate et la vessie n'offrent aucune trace de lésions profondes, et qui n'ont pas contracté l'habitude de se tirailler la verge. D'ailleurs il n'y pas seulement développement du pénis ici, car cet organe est en même temps empâté, dur et rigide ; tandis que la seule influence des tractions et des tiraillements se borne généralement, du moins chez les vieillards, à l'allonger, en le laissant mou et flasque (1). »

Cette altération dans les conditions anatomiques de la verge constitue un obstacle purement mécanique à la copulation, et ne crée qu'une impuissance relative.

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(1) Civiale, *loc. cit.*, p. 121.

Mais les rétrécissements de l'urèthre agissent aussi sur les conditions physiologiques de l'érection, et compliquent d'une manière fâcheuse l'impuissance qu'ils déterminent. « Parmi ceux des autres effets locaux des rétrécissements de l'urèthre, dit Civiale, qui méritent aussi de fixer l'attention des praticiens, parce qu'ils fournissent de précieuses notions pour l'établissement du diagnostic et l'appréciation des progrès de la maladie, se placent en première ligne les désordres qu'on observe dans les fonctions de la génération. Les érections n'ont pas ordinairement lieu comme chez l'homme en état de santé, soit que le pénis ne puisse plus se redresser, à raison de la rigidité du canal, soit que le sang ne parvienne point en suffisante quantité dans les corps spongieux et caverneux (1). » Reybard n'est pas moins explicite que Civiale : « Contrairement à ce que nous avons vu plus haut, dit-il, les coarctations uréthrales peuvent devenir une cause d'impuissance génératrice par la difficulté ou l'impossibilité de l'érection (2). »

Toute médication spéciale est ici contre-indiquée ; on ne doit s'attacher à combattre que le rétrécissement de l'urèthre, car la guérison de ce dernier amène celle de l'impuissance.

6° *Maladies de la verge.*

Les maladies qui ont la verge pour siége et l'impuissance pour symptôme sont aussi nombreuses que variées ; mais toutes n'entraînent pas le même genre d'impuissance : les unes altèrent le plaisir, que j'ai dit être une des conditions du coït normal ; les autres, en augmentant ou en diminuant le volume du pénis, détruisent les rapports d'harmonie nécessaires entre les organes des deux sexes ; d'autres enfin s'opposent à l'érection même du membre viril.

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(1) Civiale, *Traité pratique sur les maladies des organes génito-urinaires*, p. 148.

(2) Reybard, *Traité pratique des rétrécissements de l'urèthre*. Paris 1853, p. 170.

Cette division, entièrement physiologique, m'a paru tout à la fois plus rationnelle et plus intéressante que celle qui aurait pour base l'anatomie pathologique, car, ainsi qu'on le verra tout à l'heure, de ces maladies si diverses, celles-ci attaquent la verge tout entière, et celles-là n'affectent qu'une ou plusieurs de ses parties.

A. — *Impuissance par altération du plaisir.*

Dans ce groupe viennent se ranger toutes les phlegmasies simples ou spécifiques, avec ou sans ulcérations, dont le pénis ou quelqu'une de ses parties peut être le siége : le phimosis et le paraphimosis accidentels, la balanite, la balano-postite, le chancre, la cristalline ou *herpes præputialis*, l'inflammation simple ou œdémateuse du fourreau de la verge, et que Moulinié appelle *pénitis* (1), l'inflammation érysipélateuse, grangréneuse, etc., du pénis, sont de ce nombre. Il suffit de cette simple énumération pour caractériser ce groupe de maladies et pour faire comprendre combien peu nous devons nous y arrêter, tant elles rentrent dans le domaine de la pathologie générale.

B. — *Impuissance par altération du volume de la verge.*

Il en est de ce groupe comme du premier ; il comprend la grande classe des dégénérescences, dont s'occupent tous les ouvrages de chirurgie : dégénérescences cartilagineuse, osseuse, carcinomateuse, squirrheuse, cancéreuse, dont la plupart exigent l'amputation totale ou partielle de l'organe. Je n'ai donc pas à m'en inquiéter dans ce livre tout spécial, d'autant mieux que la guérison de ces affections, c'est-à-dire l'amputation de la verge, détermine précisément l'infirmité dont je suis chargé d'exposer les moyens curatifs.

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(1) Moulinié, *Maladies des organes génitaux et urinaires*. Paris, 1839, t. I, p. 79.

Ce serait donc sortir de mon cadre que de m'y arrêter plus longtemps.

Cependant il est des circonstances dans lesquelles le volume de la verge est accru au point de compromettre ou de gêner le coït, et dans lesquelles la cause du mal est aussi facile à constater qu'à guérir.

Je veux parler des calculs du prépuce.

Calculs du prépuce. — Il ne s'agit pas ici de concrétions produites par la matière sébacée que quelques personnes, par défaut de propreté, laissent longtemps séjourner entre le gland et le prépuce; quoique ces concrétions présentent parfois, ainsi qu'il m'a été donné de l'observer, une grosseur et une dureté extraordinaires, je me serais contenté de les signaler, si, à côté de ces concrétions organiques, on n'avait pas trouvé de véritables calculs composés, comme ceux de la vessie, d'acide urique, d'urate d'ammoniaque et de phosphate ammoniaco-magnésien.

Ces calculs, en effet, proviennent de l'urine qui, lorsque l'orifice du prépuce est plus étroit que le méat urinaire, reste stagnante dans la cavité de cette membrane, et y laisse déposer les sels ou les graviers qu'elle apporte du réservoir urinaire.

Ces calculs sont très-variables sous le rapport de la grosseur, de la forme et du poids : Sper en a décrit un dont le volume énorme empêchait le coït; Morand et Baillie en ont observé qui recouvraient exactement le gland et qui enlevaient à cet organe toute sa sensibilité; enfin Duméril en a recueilli un du poids énorme de 225 grammes.

Leur nombre n'a également rien de fixe : quoique le plus ordinairement le calcul soit unique, on cite des exemples où ces concrétions étaient au nombre de 60 et même de 600.

Quoi qu'il en soit et sans nous arrêter plus longtemps à l'histoire de ces productions, la chirurgie triomphe facilement de cet obstacle à un coït régulier, d'abord en opérant le phimosis, et ensuite en extrayant le calcul que cette difformité avait laissé se former et entretenait dans la cavité prépuciale.

C. — *Impuissance par défaut d'érection.*

Pour comprendre les maladies, fort rares d'ailleurs, qui font le sujet de ce paragraphe, il faut se rappeler le mécanisme de l'érection que j'ai longuement exposé dans les considérations physiologiques placées en tête de cet ouvrage (1), et que je vais résumer ici en deux mots.

Le sang rouge est apporté à la verge par l'artère honteuse qui, avant de se diviser en dorsale et profonde du pénis, fournit les artères bulbeuses, les artères bulbo-uréthrales, lesquelles constituent, avec les rameaux principaux des deux dorsales, tout l'appareil artériel de ce que Kobelt appelle l'organe passif, c'est-à-dire le gland, le corps spongieux de l'urèthre et le bulbe.

Les vaisseaux afférents du pénis sont très-nombreux : à part quelques gros troncs veineux, placés sur les côtés de la veine dorsale, qui se dirigent sous l'arcade pubienne et qui se jettent derrière celle-ci dans les plexus prostatique et vésical, la majeure partie de ces vaisseaux aboutit, à des hauteurs différentes et par des anastomoses qui embrassent les corps caverneux, dans la veine dorsale de la verge.

Enfin l'appareil copulateur est complété par deux muscles, le bulbo-caverneux et l'ischio-caverneux, dont les fonctions consistent à s'opposer à la sortie du sang pénien, en comprimant, par leurs contractions, la veine dorsale et les piliers de la verge.

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(1) Voyez la page 28.

Tous ces organes constituent un appareil hydraulique dont le jeu régulier, sous l'influence des désirs vénériens et de l'innervation, amène et soutient la turgescence du pénis. Une altération quelconque dans l'une de ces parties troublera donc le jeu de tout l'appareil, comme il arrive pour les rouages d'une montre ou les engrenages d'une machine. Il faut par conséquent rechercher les affections dont peuvent être frappés les systèmes musculaire et circulatoire de la verge.

Les muscles bulbo-caverneux et ischio-caverneux sont, comme tous les muscles de l'économie, exposés à la paralysie et à l'anesthésie. Ces états morbides sont quelquefois indépendants de toute maladie des centres nerveux, mais le plus généralement ils sont amenés par une affection de la moelle épinière.

Dans le premier cas, ces états morbides rentrent dans ce que j'ai appelé l'impuissance idiopathique, qui fait le sujet du second chapitre de cet ouvrage ; dans le second cas, ils appartiennent à l'impuissance symptomatique des maladies de l'innervation qui nous a précédemment occupé.

Je ne puis donc que renvoyer le lecteur à ces deux parties du livre.

Les affections du système circulatoire du pénis sont excessivement rares, et sous ce rapport l'anatomie pathologique est d'une pauvreté désespérante. Cependant Scarpa, je crois, dit avoir constaté une fois l'anévrysme de l'artère dorsale de la verge, et ce fait, quoique unique peut-être dans la science, jette une vive lumière sur certaines circonstances inexplicables sans son secours.

Si l'on considère la ténuité et la délicatesse des vaisseaux artériels et veineux dans lesquels circule le sang nécessaire à l'excitation et à l'érection de la verge, on conviendra que nos moyens d'investigation doivent être souvent trop grossiers pour nous faire apprécier toutes les lésions dont ces organes sont susceptibles, et qu'il doit se produire, par exemple, des dilatations ou des ruptures de ces vaisseaux, sans qu'il nous soit possible de les apprécier, comme nous le faisons sur les gros troncs veineux et artériels.

Je ne me dissimule pas que je ne puis étayer cette manière de voir sur quelque pièce d'anatomie pathologique, et que cette opinion est déduite *à priori* du fait rapporté par Scarpa.

Mais si l'on réfléchit à l'action si souvent salutaire des astringents et des toniques locaux dans des cas de faiblesse et même d'impuissance complète, on conviendra qu'il n'est pas entièrement déraisonnable d'admettre, soit la résolution de quelque caillot sanguin, soit le resserrement, et par conséquent l'énergie imprimée aux parois des vaisseaux.

Les altérations de la circulation locale de la verge me paraissent encore démontrées par l'aspect que présente le pénis des impuissants par suite d'excès de coït ou d'abus d'onanisme. Ces malheureux ont presque tous une verge plus dure et plus résistante que dans les autres cas d'anaphrodisie : on dirait que le sang, amassé dans l'organe, s'est coagulé dans les vaisseaux et ne circule plus. C'est qu'en effet, les tuniques de ces vaisseaux, trop souvent distendues par le coït ou la masturbation, perdent peu à peu leur élasticité et leur contractilité, et finissent par laisser stagner le sang dans leur cavité doublée de volume.

Cette explication est si vraie, en faisant une large part à la fatigue éprouvée par l'innervation, que dans l'impuissance propre aux débauchés et aux masturbateurs, l'eau froide ou la glace même sont, de toutes les applications locales, celles qui réussissent le mieux.

Il ne me paraît donc pas entièrement contraire à la vérité scientifique d'admettre que dans certaines impuissances, la cause du mal est tout entière dans une lésion de l'appareil circulatoire de la verge.

Cette opinion m'est peut-être moins personnelle qu'on ne pourrait le croire. On lit, en effet, dans Fodéré les lignes suivantes : « Des vices locaux dans les vaisseaux, dans les nerfs ou dans les muscles de l'organe, empêchent parfois que les cellules des corps caverneux ne se remplissent de la quantité de sang nécessaire pour l'érection, ce qui produit une atonie approchant de la paralysie. Chaptal et Gesner ont guéri de pareilles atonies du membre viril, qui duraient depuis trois ans, par des immersions répétées dans une décoction de semences de moutarde. Weikard a eu le même succès avec le musc donné intérieurement à un homme presque octogénaire. D'autres médecins, en employant des bains froids et le fer, ont réussi sur des sujets que trop de jouissances ou la masturbation avaient réduits à l'impuissance. Mahon a obtenu guérison en faisant baigner la partie dans un mélange de liqueurs minérales d'Hoffmann et d'eau, et en l'enveloppant ensuite de linges imbibés du même mélange (1). »

Ainsi que je le disais plus haut, il est très-souvent impossible de constater matériellement, soit la lésion anatomique, soit l'obstacle à la marche du fluide sanguin ; il faut alors recourir à la méthode d'exclusion dont la certitude n'est malheureusement pas absolue ici, puisque le praticien se trouve toujours en face, en dernière analyse, de l'impuissance idiopathique.

Il reste alors le *criterium* fourni par la thérapeutique.

Malheureusement ce *criterium* n'est pas d'une valeur incontestable, parce que les astringents et les toniques n'ont pas une action tellement spéciale qu'ils ne réussissent que dans ces circonstances, et que même, ces circonstances existant réellement, les médications astringentes et toniques ne puissent pas échouer quelquefois.

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(1) Fodéré, *Traité de médecine légale et d'hygiène publique*. Paris, 1813, t. I, p. 382.

En tout état de choses, cette ignorance, je pourrais même dire cette absence d'un diagnostic certain, est moins à regretter qu'on ne pense; car, pour que le scapel de l'école anatomique, aidé du microscope, s'il l'eût fallu, n'ait pas enrichi la science d'observations analogues à celle de Scarpa, il faut que les dilatations ou les ruptures des vaisseaux de la verge soient assez rares, ou même trop facilement réparables pour laisser des traces après la mort de l'individu.

7° *Maladies du cordon spermatique et des testicules.*

Les maladies du cordon spermatique et celles qui affectent les testicules ont entre elles de telles connexions, que je crois devoir les réunir dans un même paragraphe, d'autant mieux que, me proposant plus tard de les mettre dans leur véritable jour, c'est-à-dire de les considérer comme causes de stérilité, je ne veux les aborder ici que dans leurs résultats par rapport à l'impuissance; en d'autres termes, je n'ai l'intention de discuter que la question suivante dont l'intérêt n'échappera à personne :

La stérilité est-elle une cause d'impuissance ?

Il est évident que je ne vais pas anticiper ici sur l'histoire de la stérilité, qui m'occupera dans une autre partie de cet ouvrage, et que, sans rechercher les causes nombreuses qui chez l'homme annihilent la faculté procréatrice, je limite la question en ces termes : La présence du sperme est-elle nécessaire pour l'accomplissement du coït ? ou bien encore : Les désirs vénériens, l'érection de la verge et le plaisir, compagnons ordinaires de la copulation, se peuvent-ils produire non-seulement avec une sécrétion morbide du sperme, mais encore en dehors de toute sécrétion et de toute excrétion du produit testiculaire?

La solution de ce problème n'est pas seulement intéressante aux points de vue de la pathologie et du mariage; elle acquiert une importance très-grande en médecine légale dans les questions d'adultère et de viol.

A côté de ce problème, il en est un autre d'un intérêt tout aussi majeur, qui complète l'ensemble de la question et que j'aborderai également quand l'heure sera venue : c'est de savoir si l'impuissance est une cause de stérilité.

Pour le moment, je dois me borner à la première proposition que j'ai formulée dans les termes les plus généraux.

Quand on étudie l'histoire des eunuques et des castrats (1), on est obligé d'établir une distinction fondamentale au point de vue qui nous occupe, à savoir : si l'absence des organes spermatiques est congénitale ou accidentelle, et dans ce dernier cas, à quelle époque de la vie a eu lieu l'extirpation ou l'atrophie des testicules.

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(1) Ancillon dit que les jurisconsultes les partagent en quatre classes :

1° Ceux qui sont nés sans organes génitaux tant internes qu'externes; ce sont les véritables eunuques dont il cite un exemple que l'on montrait en 1701.

2° Ceux à qui on enlève toutes les parties tangibles de la génération, verge et testicules.

3° Ceux chez lesquels on atrophie les testicules, soit en les malaxant comme dans l'opération encore usitée en médecine vétérinaire sous le nom de *bistournage*, soit en sectionnant les veines et probablement tout le cordon; ceux qui étaient bistournés s'appelaient *thlibiœ*, et ceux qui étaient coupés se nommaient *thlasiœ*.

4° Ceux enfin qui, pour un motif quelconque, ne peuvent contribuer à la génération et que l'on confond tous sous le nom de *spadones* (*Traité des eunuques*, par M*** D*** (Ancillon), 1707, in-18, p. 10).

Ces divisions des anciens jurisconsultes, d'après Ancillon, ne sont pas admissibles; les deux premières classes ne doivent en faire qu'une, car les malheureux qui naturellement ou accidentellement manquent des organes externes de la génération sont impropres à la copulation et à la reproduction; en second lieu, il faut faire une classe de ceux auxquels on coupe les testicules, tout en respectant la verge, et dans laquelle doivent trouver place les eunuques si recherchés des dames romaines, comme je le dirai tout à l'heure.

Quand l'absence des glandes spermatiques est le résultat d'un vice de conformation, l'impuissance en est une conséquence fatale ; non-seulement la verge est incapable d'érection, mais encore l'infortuné atteint de cette infirmité n'a jamais de désirs et ignore toujours les charmes d'un sexe sur un autre (1).

Il n'est pas nécessaire, pour que la virilité se produise, que les testicules occupent leur place ordinaire dans le scrotum : les cryptorchides, ou ceux dont les didymes sont restés dans l'abdomen, jouisssent de tous les attributs *copulateurs* d'un homme bien conformé. Je dis les attributs copulateurs, parce que je montrerai ailleurs que cet arrêt des testicules au-dessus de l'anneau inguinal est presque toujours une cause de stérilité (2).

Mais, pour en revenir à notre sujet, lorsque les testicules ne se trouvent ni dans les bourses, ni dans l'abdomen, et que cette absence, si elle existe, est une de ces erreurs irréparables dont la nature nous donne trop souvent, hélas ! le spectacle, l'impuissance est complète, radicale et au-dessus de toutes les ressources de l'art.

On dirait que l'organe sécréteur du sperme contient le souffle qui donne la vie au sens génital, qu'il renferme un principe, un ενορμον spécial à ce sens, et qu'il le lui communique seulement à l'époque de la puberté.

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(1) Je ne préjuge point ici la réalité de l'absence congénitale des glandes spermatiques. Voyez plus loin, pour la solution de ce point controversé d'anatomie, le chapitre consacré aux anomalies du testicule.

(1) Pour tout ce qui a rapport aux vices de conformation des testicules, consulter les travaux si consciencieux de Godard : 1° *Recherches tératologiques sur l'appareil seminal de l'homme*, 1860 ; 2° *Études sur la monorchidie et la cryptorchidie chez l'homme*, 1857.

Et cela est si vrai, que la castration ou l'atrophie accidentelle des testicules après cet âge n'entraînent pas fatalement une impuissance radicale. Sans doute, les désirs vénériens et la force virile n'ont pas, toutes choses égales d'ailleurs, l'énergie qu'ils présentent chez un homme non mutilé; mais si l'eunuque ou le castrat ne peuvent accomplir des exploits comparables à ceux de ce Catalan dont une reine d'Aragon fut obligée, par ordonnance, de réglementer les victoires (1), ils sont encore capables, non-seulement d'éprouver des transports, mais encore de les faire partager à la femme. Les dames romaines n'ignoraient point cette particularité, et, désireuses de jouir du *concubitus sine Luciná*, elles la mettaient à profit, comme nous l'apprend Juvénal :

Sunt quas eunuchi imbelles, ac mollia semper
Oscula delectent, ac desperatio barbæ;
Et quod abortivo non est opus.. (2).

Ainsi, arrivant après l'établissement de la puberté, l'absence des testicules, et par conséquent de la sécrétion spermatique, c'est-à-dire la stérilité essentielle, fondamentale, certaine, n'est pas fatalement une cause d'impuissance. Que l'absence de cette sécrétion soit déterminée par l'extirpation de l'organe, par sa dégénérescence, par sa compression, par l'oblitération des vaisseaux séminaux ou par toute autre cause, l'influence qu'en ressent la faculté copulatrice est toujours la même. Qui ne sait en effet que les individus porteurs d'un sarcocèle double, d'un varicocèle volumineux, de testicules tuberculeux, etc., dont les facultés fécondantes sont éteintes, conservent cependant la possibilité d'exercer le coït? Sans doute la faculté copulatrice, et avec elle les désirs vénériens, n'ont plus ni la même énergie ni la même fréquence de besoins; ils diminuent d'intensité, cela est vrai; mais la suppression de la sécrétion séminale n'a généralement sur eux qu'une influence de plus ou de moins.

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(1) On lira avec plaisir le récit de ce jugement dans Montaigne : *Essais*, liv. III, chap. v.

(2) Sat. IV, vers 364. Voici la traduction de ces vers par Méchin :

Pour d'autres, un eunuque a d'autant plus d'attraits,
Que s'il offre à leurs sens des plaisirs imparfaits,
Ses baisers sont plus doux; de leurs feux adultères
Leurs flancs ne pourront point révéler les mystères.

Cependant les exemples des eunuques romains, les faits pathologiques que j'ai rapportés, et quelques observations faites sur les animaux qui, privés de testicules, essaient de saillir les femelles, ont donné à penser que l'instinct génésique ne résidait pas uniquement dans les testicules, mais qu'il avait aussi un siége dans le cerveau.

Je ne puis, d'une manière absolue, partager cette opinion, dont mon ami, le D^r^ Siredey, médecin de Lariboisière, s'est fait l'interprète dans l'article *impuissance* du *nouveau Dictionnaire de médecine et de chirurgie pratiques.*

Si l'instinct génésique n'avait pas exclusivement sa source dans les testicules, les castrats *avant la puberté* auraient cet instinct, ce qui n'est pas; il faut, pour que l'instinct génésique naisse et se développe, qu'il y ait, si l'on peut ainsi parler, une espèce d'imprégnation spermatique dont les traces, morales et physiques, résistent à la suppression de l'organe chargé de la renouveler. C'est cette espèce d'imprégnation morale qui a donné lieu à l'opinion que je combats. Sans cette imprégnation morale, je le répète, l'instinct génésique ne naît jamais; or, comme la source de cette imprégnation est dans les testicules, il faut bien admettre que l'instinct génésique réside uniquement dans ces organes, et que, sans leur impulsion, le sens intime ignore pour toujours les besoins et les attraits des rapprochements sexuels.

L'altération du sperme, quelle qu'en soit d'ailleurs sa nature, a une action encore moins marquée que sa suppression sur l'organe copulateur. Il faut ici ne pas confondre ce que j'entends par altération du sperme avec certaines affections des organes qui altèrent en effet la semence, comme les abcès des testicules ou des vésicules séminales, le cancer de la prostate etc., etc. J'ai examiné des spermes qui ne contenaient aucune trace d'animalcules, et je puis assurer que les individus qui me l'avaient fourni, étaient loin de se plaindre d'impuissance. D'autres fois le sperme est si fluide, qu'on le prend volontiers pour le produit de la sécrétion prostatique, et pourtant la faculté copulatrice n'en est point diminuée. On peut multiplier les exemples dans lesquels l'altération du sperme n'a en rien affaibli la force virile des individus qui la présentent; on comprend sans peine qu'il en doit être ainsi, puisque l'ablation elle-même des testicules n'entraîne pas fatalement la mort de l'appareil copulateur.

Je rappellerai ces considérations lorsque j'examinerai l'influence de l'impuissance sur la stérilité, et je rapprocherai les conséquences auxquelles je suis arrivé ici, de celles que me fournira alors l'examen du second problème.

CHAPITRE IV

IMPUISSANCE CONSÉCUTIVE.

J'ai, dans le chapitre précédent, passé en revue les états divers, physiologiques ou pathologiques, qui s'accompagnent de l'altération d'une ou de plusieurs des conditions que nous avons reconnues nécessaires pour constituer, chez l'homme, le coït normal; je vais maintenant m'occuper des circonstances qui, disparues depuis un temps plus ou moins long, laissent, comme trace de leur passage dans l'organisme, l'inaptitude à l'acte copulateur.

Parmi ces circonstances, les unes, purement et entièrement physiques, ne sont pas autre chose que les états pathologiques, la maladie proprement dite ; les autres, au contraire, soumises à notre libre arbitre, ont eu besoin pour se produire, de l'incitation interne que l'on appelle la volonté.

C'est dans cette division que je comprendrai toute la matière de ce chapitre.

§ I. — Impuissance consécutive à un état organo-pathologique.

Les états pathologiques qui laissent après eux l'impuissance sont excessivement nombreux ; la majorité de ceux qui la comptent au nombre de leurs symptômes, peut être rangée dans cette catégorie, car les altérations locales, soit de l'innervation, soit des tissus, sont souvent assez profondes pour survivre à la cause qui les avait produites. Ce fait, d'un ordre de pathologie générale, se montre tous les jours, par exemple, dans les affections comateuses, dont la paralysie ou l'anesthésie persistent, en tout ou en partie, après la disparition de l'apoplexie ou de l'accident cérébral qui leur avaient donné naissance.

Je me suis ailleurs suffisamment occupé des affections qui s'accompagnent d'impuissance, pour qu'il me soit permis de ne plus y revenir ici ; je dirai seulement, d'une manière générale, que la suspension de la fonction copulatrice peut persister, dans les cas où la maladie n'avait pas son siége sur l'appareil génital lui-même, toutes les fois que l'innervation ou les forces plastiques de l'organisme ont été profondément troublées, comme, par exemple, dans à peu près toutes les affections graves des centres nerveux, et dans les maladies débilitantes dont les convalescences sont longues et pénibles.

Quelquefois ces mêmes affections, sans avoir produit l'impuissance, et même après avoir occasionné un état tout à fait contraire, lèguent au malade ce triste accident. J'ai observé un fait de ce genre, et il en existe plusieurs exemples dans la science ; ce fait a rapport à une apoplexie du cervelet qui, pendant tout le temps qu'elle dura, produisit une espèce de priapisme, et laissa, après sa guérison, une impuissance complète qui ne se dissipa qu'après plusieurs mois d'une médication localement excitatrice.

Les pertes trop abondantes de sang (*hémorrhagies*), d'urine (*polyurie*), de matières fécales (*dyssenterie*), etc., agissent comme les maladies débilitantes, et doivent être rangées dans le cadre de celles qui portent atteinte aux forces plastiques.

En résumé, les maladies générales auxquelles l'impuissance consécutive peut être rapportée se divisent en deux grandes classe : 1° celles dont l'action délétère s'est exercée sur l'innervation ; 2° celles dont l'influence s'est principalement fait sentir sur la vie de nutrition.

Dans le premier cas, l'impuissance a surtout pour caractère l'impossibilité de l'érection ; presque toujours les désirs vénériens subsistent, l'organe seul fait défaut.

Dans le second cas, au contraire, la flaccidité de la verge s'accompagne presque constamment d'indifférence pour le sexe ; l'apathie morale est au niveau de la faiblesse génitale, et le malade, privé de désirs, n'obéit qu'à sa raison en voulant ressaisir des jouissances vers lesquelles rien ne le pousse.

Aussi la médication, est-il besoin de le dire, diffère complétement dans l'un ou l'autre cas : excitatrice lorsque l'impuissance est consécutive à une affection des centres nerveux, elle est fortifiante d'abord et excitante ensuite, lorsque l'anaphrodisie succède à des altérations des forces plastiques.

J'ai dit ailleurs (1) les ressources qu'offre chacune de ces médications ; je n'y reviendrai pas ici, et j'aborde la partie la plus intéressante de ce paragraphe, c'est-à-dire celle qui se rapporte aux maladies dont l'appareil génital est le siége.

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(1) Voyez les pages 133 et suivantes.

En première ligne, et pour ne rien omettre, je dois signaler les accidents traumatiques et la gangrène qui ont emporté l'organe copulateur, ainsi que les affections diverses qui ont déterminé l'amputation de la verge. — Insister sur ces circonstances serait tomber dans les facéties de M. de la Palisse. — Cependant on s'est demandé si le congrès était encore possible alors qu'il ne restait plus au-devant du pubis qu'un morceau de verge. — La question est fort intéressante, je l'avoue, au point de vue de la médecine légale et de la fécondation, mais elle me paraît complétement résolue par rapport au coït tel que je l'ai défini.

En effet, le gland étant le siége du plaisir spécial, *suî generis*, que procure l'excitation vénérienne, il est bien évident qu'en l'absence de cet organe, la sensation spéciale dont je parle ne se produit pas, et que le congrès ne peut déterminer qu'une manifestation de la sensibilité générale. Aussi, en admettant que l'érection du morceau restant de la verge soit suffisante pour permettre un rapprochement sexuel, le coït est incomplet et l'impuissance réelle par défaut de véritable volupté.

D'ailleurs, lorsqu'il est admis que les corps caverneux d'un pénis accidentellement raccourci se peuvent gorger de sang comme dans une érection normale, la question du coït perd beaucoup de son importance, à cause de toute absence de thérapeutique, et il ne reste véritablement d'intéressant que la question de fécondation, tant au point de vue de la médecine légale que par rapport à l'ordre social.

Ce n'est point ici le lieu d'aborder ce problème, que je renvoie à une autre partie de cet ouvrage.

Je fais la même réserve pour les maladies du testicule, du cordon spermatique, des vésicules séminales et de la prostate, qui seront mieux placées dans le cadre réservé à la stérilité, et je ne m'occuperai ici que de quelques affections de la verge dont les suites peuvent entraîner l'inaptitude à la copulation.

Le phimosis se présente en première ligne, quoique la difficulté du coït qui lui succède doive être rapportée, moins à la maladie elle-même, qu'au mode opératoire qui a amené sa guérison.

Écoutons sur ce point J.-L. Petit, qui, discutant les avantages qu'offre l'incision unique et supérieure du prépuce sur la double incision latérale, dit, avec cette grande raison qui l'a si haut placé dans l'estime des chirurgiens : « Outre les avantages que procure l'incision qui partage le prépuce en deux parties égales, on peut ajouter que l'incision ou les incisions latérales sont difformes et nuisent aux fonctions de la verge; l'incision latérale découvre le gland d'un côté seulement, pendant que la partie du gland opposée est entièrement cachée, sans qu'on puisse la découvrir, surtout lorsqu'il y a gonflement et inflammation, car alors le prépuce ne peut plier, soit par son épaisseur, soit par sa dureté. Après la guérison, la difformité qui reste nuit à la génération, en ce que le prépuce se trouve tout d'un côté et forme un paquet de peau qui rend l'introduction de la verge difficile et même douloureuse; mais la difformité est encore plus grande lorsqu'on coupe des deux côtés, parce qu'il reste un lambeau entre les deux coupures, qui fait à peu près le même effet que dans le cas précédent (1). »

Ces sages et judicieuses observations n'ont pas peu contribué à faire abandonner l'incision ou les incisions latérales dans l'opération du phimosis; mais si le mode opératoire que proscrit J.-L. Petit avait été employé, et si les lambeaux médians présentaient l'incommodité dont il est question, il ne faudrait pas hésiter, ainsi que le propose le chirurgien que je cite, à faire l'amputation de ces lambeaux.

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(1) J.-L. Petit, *Œuvres complètes*, p. 698.

Avant de quitter le domaine de la médecine opératoire, je dois signaler encore toutes les opérations pratiquées sur la verge, comme capables de déterminer, à la suite des cicatrices, une courbure de cet organe qui rend impossible, ou tout au moins très-difficile son intromission dans la cavité vaginale.

Soit que l'opération n'intéresse que le fourreau de la verge, comme dans les cas où l'on veut artificiellement former un prépuce dans le paraphimosis naturel; soit qu'elle atteigne le corps spongieux de l'urèthre ou les corps caverneux, le résultat est identique; des adhérences s'établissent, dans le premier cas, entre les parties des téguments incisés, de sorte que la peau, retenue par ces adhérences, résiste sur ces points au développement de la verge et l'incline fatalement de ce côté: dans le second cas, les adhérences ont lieu entre les cellules des corps spongieux de l'urèthre ou des corps caverneux, et la courbure est déterminée par l'impossibilité qu'éprouve le sang de pénétrer dans ces adhérences, pendant qu'il remplit toutes les autres parties de l'organe copulateur.

Les mêmes effets se produisent aussi dans les états pathologiques qui amènent des solutions de continuité dans les tissus de l'appareil génital, comme, par exemple, dans les cas de brûlure ou de gangrène qui enlèvent quelques portions du scrotum ou de la peau de la verge.

Cet accident, c'est-à-dire la courbure de la verge, dû à une cicatrice vicieuse ou à des adhérences des cellules du tissu érectile, serait sans nul doute prévenu, s'il était possible de maintenir l'érection du pénis pendant tout le traitement de la maladie; malheureusement cette érection ne peut être obtenue pendant un si long temps, même d'une manière artificielle; mais le dommage n'est pas à regretter, car un priapisme, venant compliquer les accidents inflammatoires dont s'accompagnent toujours les circonstances dont il est ici question, pourrait occasionner des accidents plus graves que la maladie principale et que l'infirmité dont elle est quelquefois suivie.

Celle-ci est, à son début, rarement au-dessus des ressources de l'art; mais il est à craindre de voir échouer toute thérapeutique, lorsque les adhérences sont anciennes, ou lorsque des érections vigoureuses ne succèdent pas à la cicatrisation.

Dans les circonstances opposées, c'est-à-dire lorsque les adhérences sont récentes et que le sang afflue avec abondance dans les corps caverneux, il suffit, la plupart du temps, de seconder simplement la nature. Les fondants, tels que les iodures, le mercure et la ciguë, appliqués localement, rendent de très-grands services, si, en même temps, je le répète, les érections de la verge se soutiennent régulières et énergiques.

Cette dernière condition est si importante qu'elle a été soigneusement notée par J.-L. Petit : « J'ai remarqué, dit-il, en parlant des adhérences qui se forment entre les cellules du corps spongieux de l'urèthre et des corps caverneux pendant l'inflammation blennorrhagique, j'ai remarqué que ces tumeurs se fondent ordinairement pendant le traitement d'une chaude-pisse cordée ou de toute autre inflammation de la verge ; mais qu'elles subsistent toujours à ceux qui perdent l'érection et qui ne la recouvrent point pendant le traitement ou immédiatement après (1). »

Ces lignes de J.-L. Petit nous apprennent qu'à côté des accidents traumatiques ou des opérations pratiquées sur la verge qui font le sujet de ce paragraphe, on doit placer les inflammations uréthrales ou du pénis tout entier, quelle que soit d'ailleurs la nature de ces phlegmasies. On ne peut nier qu'il n'y ait là, en effet, une cause bien réelle d'adhérences entre les cellules du tissu érectile ; j'ai eu occasion d'observer plusieurs fois les tumeurs qui en résultent, mais toutes celles que j'ai vues n'étaient plus assez volumineuses pour entraîner une courbure de la verge; je me rappelle, entre autres faits, celui d'un commissaire-priseur chez qui toute blennorrhagie (et il en avait souvent) était annoncée par la présence, au corps spongieux de l'urèthre, d'une de ces petites tumeurs qui disparaissait à la suite du traitement antiblennorrhagique, sans jamais avoir inquiété le malade.

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(1) J.-L. Petit, *loc. cit.*, p. 716.

Cependant on comprend que la courbure de la verge puisse être amenée par l'inflammation de l'urèthre ou du pénis, c'est-à-dire par les adhérences que ces états déterminent; l'observation de J.-L. Petit reste tout entière, et, dans ce cas, les indications thérapeutiques sont conformes à celles que j'ai indiquées plus haut, à l'occasion des courbures de la verge succédant à des opérations ou à des accidents traumatiques sur cet organe.

§ II. — **Impuissance consécutive à des excès.**

Toujours dépendantes de la volonté, les circonstances qui vont faire le sujet de ce paragraphe se distinguent, par ce caractère, des états morbides dont je viens de parler, qui, eux, ne ressortent pas de la conscience, comme les maladies graves, aiguës ou chroniques, affectant l'économie générale ou limitées à quelque point de l'appareil génital.

Mais ce caractère, excellent sans doute pour déterminer leur physionomie, ne suffit pas pour les faire mettre parmi les causes de l'impuissance; il faut, pour qu'elles aient cette influence, que leur action se soit répétée souvent et pendant un laps de temps plus ou moins long; en d'autres termes, il faut qu'il y ait *excès* dans l'exercice de la fonction mise en jeu par ces circonstances, et par conséquent *abus* de la circonstance morbifique elle-même.

Les mots excès et abus ne doivent point être pris dans un sens absolu; leur histoire pathologique est liée à tant de circonstances diverses, physiologiques et morbides, que ce qui est excès pour l'un est simplement usage pour l'autre. L'âge, le tempérament, la constitution, les habitudes, l'état de santé ou de maladies, etc., jouent nécessairement un grand rôle dans l'histoire des excès et des abus; aussi par cela même que les excès se rangent parmi les causes les plus fréquentes et les mieux connues de l'impuissance, il faut, dans l'étiologie de cette dernière, pour ne pas tomber dans des erreurs regrettables, tenir grand compte de toutes ces influences et ne pas adopter sans examen la conviction des malades, surtout de ceux qui ont des prétentions médicales ou qui lisent les livres relatifs à notre art.

A. — *Excès médicamenteux.*

Les substances dont l'usage abusif peut entraîner l'impuissance seraient, s'il en fallait croire les anciens, aussi nombreuses que variées. Peu d'auteurs se sont tenus dans la réserve qu'observe Venette sur ce point, et il est peut-être utile de rappeler ici rapidement quelques-uns de ces agents dont la réputation fut anciennement très-grande.

En première ligne se place le *vitex* ou *agnus castus*, avec les branches et les feuilles duquel les dames d'Athènes, selon Dioscoride (1) se dressaient des lits pendant les fêtes consacrées à Cérès. Arnaud de Villeneuve va même plus loin que son devancier; il prétend que, pour apaiser les aiguillons de la chair, il suffit de porter un couteau dont le manche serait fait avec le bois de cet arbrisseau. C'est sur la foi de ces témoignages que l'agnus castus était employé dans les monastères, à l'anéantissement des désirs contraires à la chasteté de ces saints lieux.

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(1) *Commentaire* de Matthiole, *sur le* Ier *livre de Dioscoride*, ch. CXVI.

Le nénuphar doit sa réputation à Pline, qui assure « que ceux qui en prendront pendant douze jours, se trouveront incapables de contribuer à la propagation de l'espèce ; et que si l'on en use l'espace de quarante jours, on ne sentira plus les aiguillons de l'amour (1). »

La laitue, dont on a tant vanté les vertus anaphrodisiaques, doit tout l'honneur dont elle a joui à un charmant épisode de la fable. Vénus, d'après le récit des poëtes, voulant oublier ses amours adultères, ensevelit Adonis sous une feuille de laitue, et garda, dès lors, grâce à cette plante, une chasteté peu compatible avec ses goûts et ses habitudes.

Le café, que ses propriétés excitantes eussent dû mettre à l'abri de tout reproche d'anaphrodisie, a été vivement attaqué dans une thèse, restée célèbre, et soutenue, en 1695, à la Faculté de médecine de Paris ; il a été accusé de rendre *les hommes et les femmes inhabiles à la génération.* Stenzel, venu ensuite, compte aussi l'impuissance parmi les maladies qu'entraîne l'usage immodéré du café, et, à cette occasion, il raconte une histoire qui, malgré son authenticité apocryphe, mérite d'être connue : « L'usage modéré du café, dit-il, loin d'affaiblir la force de ceux qui sont d'un tempérament vif et robuste, et qui ont les parties de la génération en bon état, sert au contraire à les exciter à l'amour. Il produit des effets contraires chez les personnes faibles qui abondent en phlegme, qui ont beaucoup de particules terrestres superflues, et dont les organes de la génération sont languissants. De ce nombre était Mahmud Kasnin, roi de Perse, qui était grand preneur de café et qui se trouva hors d'état de s'acquitter du devoir conjugal. Sa femme attribua son impuissance à l'usage immodéré qu'il faisait du café; et elle en était tellement persuadée, que voyant un jour de sa fenêtre un cheval qu'on allait châtrer, elle dit à ceux qui le menaient, qu'ils pouvaient se dispenser de faire souffrir à cet animal une opération aussi cruelle, puisqu'en lui donnant seulement du café, on pourrait le rendre aussi énervé que le roi (1). »

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(1) Pline, *Histoire du monde,* liv. XXV, chap. VII.

Le nitrate de potasse a été également accusé de produire l'anaphrodisie, et l'usage qui s'en répandit en Angleterre, lorsque Bacon l'eut mis en faveur, attira au chancelier les malédictions des dames : « Le nitre, dit l'auteur anonyme des *Anecdotes de médecine*, est un sel dont l'usage ne dispose pas à l'amour. C'est un puissant remède dans les cas où il faut s'opposer à une disposition inflammatoire du sang. Le chancelier Bacon avait conçu pour cette substance saline une sorte d'affection. Il fit tous ses efforts pour en accréditer l'usage : il engagea tous les médecins d'Angleterre à concourir à son dessein. Le nitre devint à la mode. Sur la parole d'un aussi grand homme, on le prodigua dans presque toutes les maladies. On le prenait même dans la meilleure santé, comme un préservatif; mais les femmes proscrivirent bientôt ce remède. Elles trouvèrent que leurs maris étaient moins portés à satisfaire leurs désirs depuis qu'ils en usaient. Elles s'en prirent au chancelier qui l'avait répandu. Quelques-unes, apparemment plus sensuelles que raisonnables, allèrent même jusqu'à crier à la sorcellerie, au maléfice, etc., etc. (2). »

Je n'en finirais pas, si je voulais rapporter toutes les substances que la crédulité ou l'ignorance ont accusées, soit d'anéantir les désirs, soit d'abattre l'énergie virile. J'estime qu'il n'y a pas plus d'anaphrodisiaques que d'aphrodisiaques vraiment dignes de ce nom. Le sens génital est, comme tous les autres sens, soumis aux lois de la sensibilité générale, et, à ces conditions, accessible aux moyens ordinaires de la thérapeutique. Quant à sa sensibilité spéciale, qui le distingue et le constitue ce qu'il est, ayons le courage de reconnaître notre ignorance, qui n'a peut-être pas toute la gravité que l'on serait tenté de lui attribuer de prime abord. Dans l'amaurose, dans la surdité, s'occupe-t-on de la sensibilité spéciale qui constitue la vision ou l'ouïe? Évidemment non; les moyens thérapeutiques les plus certains et les plus usités contre ces affections, ne sont pas des spécifiques; ils sont tous tirés du cadre de la thérapeutique générale.

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(1) Stenzel, *Toxicologia*, lib. I, *Coffæa*.

(2) *Anecdote de médecine*, 2ᵉ partie, anecd. CXXXII, p. 28.

Mais par cela même que je conteste l'existence de substances anaphrodisiaques proprement dites, j'admets l'action débilitante de certains agents sur les organes génitaux; tels sont ceux qui dans la matière médicale portent les noms de *narcotiques*, de *sédatifs*, de *stupéfiants*, etc.

Il est incontestable, en effet, que l'usage longtemps prolongé de l'opium, du datura, de la jusquiame, des bromures, etc., ne puisse amener l'impuissance; les Orientaux, qui font abus des préparations opiacées et du chanvre indien sous le nom de haschich, leur doivent attribuer autant, sinon plus, qu'aux excès vénériens, la débilité précoce qui les frappe.

A côté des stupéfiants proprement dits, viennent se placer tous les agents qui exercent une action sédative sur le système nerveux, et qui, par conséquent, est analogue à celles des narcotiques. Fodéré mentionne sous ce rapport le fait suivant : « L'asphyxie par la respiration de gaz impropres à cette fonction, dit-il, cause quelquefois une impuissance temporaire par suite de l'impression sédative que ces gaz produisent sur le système sensitif, et qui assimile leurs propriétés à celles de l'opium, de la jusquiame, etc. J'ai traité un homme, âgé d'environ quarante ans, qui, ayant échappé à un état apoplectique occasionné par la vapeur de charbon, resta tellement impuissant pendant six mois, qu'il était absolument insensible à toutes les caresses que sa femme, qu'il aimait jusqu'à la jalousie, mettait en usage pour l'exciter. Il reprit complétement ensuite son état naturel (1). »

L'impuissance produite par l'abus des narcotiques ou des agents dont l'action est analogue à celle des stupéfiants, respecte d'ordinaire les désirs vénériens, et n'est caractérisée que par l'impossibilité de l'érection. Le système nerveux est seul atteint, c'est sur lui seul qu'il faut agir.

Mais ici une difficulté se présente : convient-il de s'adresser aux masses encéphalique et spinale, ou ne faut-il porter sa thérapeutique que sur l'appareil génital même ? Quelques expériences que j'ai faites, et quelques observations que j'ai recueillies, m'ont convaincu que, dans la majorité des cas, il fallait s'abstenir de tout excitateur général, surtout des moyens internes, tels que la brucine, la strychnine, la noix vomique, etc., etc.

Au contraire, l'électricité, limitée aux organes génitaux, me paraît, dans les cas dont il s'agit, d'une efficacité bien supérieure à toute autre médication. On ne dédaignera pas les frictions sèches ou excitantes tout le long du rachis, car elles peuvent être considérées comme les succédanés de la flagellation.

Il est inutile de marquer que toute thérapeutique est vaine, si l'usage des substances qui ont amené l'impuissance, n'est pas complétement suspendu. C'est une condition *sine quâ non* de réussite, et toute médication doit commencer par là.

Il est une autre classe d'agents, dont l'action, toute différente de celle des narcotiques et des sédatifs peut cependant aussi produire l'impuissance.

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(1) Fodéré, *Traité de médecine légale*, etc. Paris, 1813, t. I, p. 382.

Ce sont les *fondants.*

Tout le monde sait l'influence exercée sur les glandes par le mercure, l'iode, le brome, l'or, l'argent, etc., influence qui peut aller jusqu'à l'atrophie de ces organes. J'ai interrogé un très-grand nombre de syphilitiques soumis, soit aux mercuriaux, soit aux préparations d'iode, et presque tous m'ont avoué un affaiblissement de l'organe sexuel, après une durée plus ou moins longue de leur traitement. De plus, j'ai constaté plusieurs fois l'impuissance complète et absolue chez des phthisiques rendus à la santé par l'inhalation souvent répétée des vapeurs d'iode (1).

Aucun doute ne saurait s'élever sur la réalité de l'action anaphrodisiaque des fondants, d'autant mieux que l'anaphrodisie se trahit quelquefois par l'atrophie même des testicules. Cette dernière altération n'est pas constante ou du moins n'est pas toujours appréciable, soit que l'on n'ait pu tenir compte de l'état antérieur du testicule, soit que l'épaississement ou l'infiltration de quelque tunique redonne à l'organe le volume qu'il aperdu, soit par tout autre motif.

Cependant, avouons-le, pour que le genre d'impuissance dont il s'agit se produise avec une certaine gravité, il est nécessaire que l'usage des fondants ait été continué longtemps, comme, par exemple, dans le traitement de la phthisie pulmonaire par la méthode de MM. Piorry et Chartroule. C'est ainsi que certaines professions exposent ceux qui les exercent à perdre leur virilité, comme on peut s'en convaincre chez les ouvriers qui manient le mercure et ses préparations. J'ai examiné un certain nombre de miroitiers et de doreurs sur métaux, et, chez presque tous, j'ai constaté des testicules moins volumineux que chez les autres hommes.

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(1) Voyez la page 244.

Dans cette sorte d'impuissance, les malades sont peu sollicités par les désirs vénériens. Ils montrent de l'indifférence pour les plaisirs sexuels, et quand ils veulent s'y abandonner, ils trouvent presque toujours un organe indocile et peu actif.

Quand ces dispositions morales et physiques atteignent certaines limites, il est à craindre que les organes testiculaires aient éprouvé une altération profonde et se soient atrophiés, auquel cas les ressources de la médecine sont complétement nulles.

Mais il est rare, je le répète, que l'usage des fondants ait pu être poussé assez loin pour déterminer une pareille impuissance, sans avoir au préalable occasionné des désordres assez graves qui en font suspendre l'emploi. Aussi, dans la plupart des cas, on n'a affaire qu'à un simple affaiblissement du sens génital, et alors un bon régime analeptique et l'air de la campagne suffisent, avec le temps, pour ramener toute l'énergie virile.

B. — *Excès de l'exercice musculaire.*

On peut comparer les effets des exercices musculaires immodérés à ceux des sécrétions trop abondantes ; ils se traduisent, comme dit Londe (1), par l'épuisement du système nerveux cérébral et rachidien, par l'épuisement des organes de relation et des viscères, le trouble des digestions, soit que ce trouble se manifeste sous l'influence d'une alimentation stimulante ingérée après une grande fatigue, soit qu'il résulte de l'inertie de l'estomac, dont les plans musculeux ne se contractent plus qu'imparfaitement, bien que la membrane muqueuse se trouve dans un état tout à fait normal.

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(2) Londe, *Gymnastique médicale*, Paris, 1821.

L'épuisement, qui, par la fatigue, se produit dans l'innervation, et l'état atonique de l'estomac, rendent parfaitement compte de l'impuissance qui succède aux excès de marche, de course, etc., mais cette impuissance est essentiellement passagère, et le repos et le sommeil, en réparant les pertes de l'influx nerveux, ramènent l'énergie dans l'appareil générateur.

Cependant, si les excès de l'exercice musculaire se prolongent d'une manière continue, de façon que l'épuisement nerveux ne se répare qu'imparfaitement, il peut arriver que les organes reproducteurs soient affectés de ce manque d'équilibre et participent plus ou moins à la caducité précoce qui frappe tout l'organisme.

Pourtant il faut reconnaître qu'une semblable impuissance est excessivement rare, et que l'action des excès des exercices actifs se porte plutôt sur le *consensus* moral que sur l'appareil génital lui-même. La fatigue corporelle allanguit l'esprit et émousse les passions; la force vitale, consacrée tout entière à réparer les pertes éprouvées, semble n'avoir plus assez d'énergie pour seconder l'imagination dans ses rêves amoureux et ses images lascives. Près d'un homme épuisé par la marche ou tout autre exercice, la femme étale en vain les séductions de ses caresses et de sa beauté; ses charmes ne reprennent tout leur empire que lorsqu'un repos et un sommeil réparateur ont redonné à l'imagination la vigueur qui engendre les désirs.

Presque toujours le régime alimentaire doit venir au secours de cette première condition de succès; on donne, au début, la préférence aux aliments dont la digestion est facile et aux sucs nutritifs. L'état de l'estomac, on le comprend, détermine la nature de ce régime, car, nul ne l'ignore, une substance est d'autant mieux assimilée qu'elle est plus facilement digérable. On ne peut donc, sous ce rapport, tracer une règle *à priori*.

C. — *Excès digestifs.*

S'il est un ensemble d'organes qui entretienne avec toutes les autres parties de l'économie, des relations intimes et constantes, c'est à coup sûr l'appareil qui sert à la nutrition et partant à la conservation de l'individu ; aussi les excès dont la nutrition peut être l'objet, qu'ils soient en deçà ou au delà du type normal, exercent-ils une influence manifeste sur toutes les fonctions tant organiques qu'animales.

La fonction génitale, en dehors même des sympathies spéciales qu'elle entretient avec les fonctions digestives, devait plus que toute autre peut-être se placer sous la dépendance de l'appareil nutritif, puisque son énergie et sa finalité sont proportionnelles, sauf quelques cas pathologiques exceptionnels, à la force de développement général, qui se règle elle-même sur l'état de la nutrition.

Cet état, en dehors du type normal, s'offre, comme je le disais plus haut, sous deux formes entièrement opposées, c'est-à-dire avec excès en moins, ou avec excès en plus, et dont l'influence est, dans les deux cas, également funeste au sens génital. C'est donc à ce double point de vue que nous devons considérer les excès de la nutrition qui s'appellent, d'une part, tempérance, jeûne, macération, et, d'autre part, intempérance ou goinfrerie, quand il ne s'agit que des aliments, et ivrognerie, quand il s'agit de liqueurs spiritueuses.

1° *Excès de tempérance.* — L'histoire de toutes les religions qui ont fait de la chasteté une vertu glorifiée dans leurs dogmes, nous a conservé le nom de pieux solitaires qui, par des jeûnes et des macérations de toutes sortes, parvenaient à dompter l'aiguillon de la chair et à triompher dans les luttes que leur fanatisme engageait contre la nature. C'est ainsi que les saint Antoine et les saint Jérôme purent résister aux séduisants fantômes qui les venaient tenter pendant leur sommeil, et que tant de fervents cénobites rapportèrent à Dieu une virginité qu'ils avaient promis de respecter.

Sine Cerere et Baccho friget Venus est un vieil adage dont la vérité ne saurait être mise en doute; mais il y a loin de la modération des ardeurs amoureuses causée par la tempérance, à l'étouffement des désirs vénériens et à l'impuissance de l'organe copulateur, amenés par les excès de jeûne et de macération.

La tempérance, unie surtout à la continence, loin de porter atteinte à l'énergie virile, lui donne, au contraire, une force nouvelle; pour qu'elle produise les désordres génésiques dont nous parlons, il faut qu'elle soit poussée à l'extrême, et qu'elle détermine cet état d'affaiblissement général que j'ai précédemment étudié sous le nom de consomption.

Je ne reviendrai pas ici sur ce point, d'autant mieux que les exemples d'anaphrodisie par excès de tempérance sont des mythes dans nos sociétés modernes, et qu'il est plus utile de nous étendre sur les infirmités causées par les excès d'intempérance dont tous les jours, hélas! nous avons le triste spectacle.

2° *Excès d'intempérance.* — Quoique l'intempérance affecte spécialement le sens du goût (1), elle présente deux physionomies tellement tranchées, selon qu'elle dérive des excès de nourriture ou des excès de boisson, qu'il est indispensable de l'étudier séparément sous chacune de ces deux faces. Nous aurons donc à examiner l'intempérance par excès d'aliments et l'intempérance par excès de boissons.

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(1) Quelques auteurs, Virey entre autres, dans l'article INTEMPÉRANCE du *Dictionnaire des sciences médicales*, comprennent sous le nom d'*intempérance* les excès du sens du goût et ceux du sens génital. Cette confusion est regrettable, parce que le même mot ne peut et ne doit servir à exprimer des faits si éloignés les uns des autres. Les moralistes, en désignant sous les noms de *continence* et d'*incontinence* les excès du sens génital, me paraissent plus logiques et me forcent ainsi à me ranger à leur opinion.

1° *Intempérance par excès d'aliments.* — Les excès d'aliments, considérés au point de vue de l'impuissance, ont un triple mode d'action :

1° Ils amènent l'obésité, qui, ainsi que nous l'avons vu, constitue quelquefois un obstacle mécanique à la copulation.

2° Ils absorbent, au profit d'une seule passion, tous les stimulants de la vie morale.

3° Enfin, ils enlèvent à l'appareil génital tout ou partie de l'énergie vitale.

L'obésité m'a longuement occupé dans une autre partie de cet ouvrage (1), je n'y reviendrai pas ici.

Je ne m'arrêterai qu'aux deux autres modes d'action des excès de table, que l'on peut réunir dans le même cadre, parce qu'ils découlent de la même loi physiologique.

Cette loi est la suivante :

Tout organe ou tout appareil d'organes fonctionnant avec excès, a besoin d'un surcroît d'activité qu'il enlève aux autres organes, et plus spécialement à ceux qui entretiennent avec lui des rapports sympathiques, ou qui, déjà affaiblis, ont moins de force pour lui résister.

J'ai déjà dit, et j'exposerai plus longuement tout à l'heure, que les organes qui ont avec l'appareil génital les relations les plus intimes sont l'estomac et le cerveau, en tant que ce dernier organe est considéré comme le siége des facultés intellectuelles.

Je n'ai donc à m'occuper ici, d'une part, que des rapports de sympathie qui unissent l'estomac et les facultés morales d'où naissent les désirs vénériens, et d'un autre côté de l'influence qu'exerce l'organe digestif sur l'appareil de la copulation.

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(1) Voyez la page 203.

Sous le premier rapport, les excès de table, répétés d'une manière continue, agissent de deux manières sur l'organe de la pensée : tantôt en lui enlevant et en appelant vers l'estomac une grande quantité d'influx nerveux, afin de débarrasser les voies digestives des aliments qui les surchargent ; et tantôt en déterminant dans la masse cérébrale de petites congestions qui, souvent renouvelées, finissent par porter un trouble profond dans les fonctions de l'encéphale. Les grandes idées et les nobles passions sont incompatibles avec les plaisirs exagérés de la table. Les *gastrolâtres*, pour me servir de l'heureuse expression de Rabelais, arrivent, à la longue, à perdre le sentiment de leur personnalité et à se dépouiller de tous les nobles attributs qui distinguent l'homme de la brute. Voyez dans quel profond avilissement tombent les Romains, lorsque, abandonnant les vertus antiques, ils s'assèyent aux tables somptueuses de leurs empereurs. Vainement l'amour les sollicite, la beauté les appelle ; leurs pensées, leurs désirs, leurs passions sont ailleurs et poursuivent un autre but ! Semblables au Grec Philoxène, qui ne formait plus que le vœu d'avoir un gosier long comme l'oie, afin de mieux savourer les mets, les gastrolâtres concentrent dans un seul de leurs organes toutes leurs sensations, tous leurs plaisirs, toutes leurs voluptés ; si quelquefois leur imagination engourdie éclaire leur pensée d'un faible et fugitif éclair, ils s'en servent, non pour ressaisir un lambeau de leur individualité perdue, mais pour se replonger, avec une nouvelle ardeur, dans leur crapuleuse débauche, en rêvant, comme disait d'Aigrefeuille, une *Académie de la gueule*.

La diminution et quelquefois même l'étouffement des désirs vénériens, amenés par les excès de table, ne sont certainement pas sans influence sur l'énergie de l'organe copulateur lui-même ; ils suffiraient à eux seuls pour rendre compte de l'impuissance qui succède à ces abus, si d'autres circonstances, que les plus simples notions de la physiologie nous enseignent, ne concouraient aussi à produire l'anaphrodisie.

Tout le monde sait, en effet, qu'après un copieux repas, surtout si l'on a fait usage de liqueurs spiritueuses, les forces génitales sont loin de répondre à l'ardeur des désirs ; ceux-ci sont le résultat de l'exaltation de l'imagination, née sous l'empire de l'excitation des voies digestives, et sont des amorces trompeuses sur lesquelles l'homme prudent se garde de fonder de trop grandes espérances.

Nul n'ignore que pendant le travail de l'estomac, toutes les fonctions animales, c'est-à-dire toutes les fonctions de relation semblent s'anéantir et abandonner leur vitalité à l'organe digestif, qui, lui, a besoin d'un surcroît de forces pour se débarrasser des aliments qui le remplissent. L'homme qui digère ne pense plus, se meut difficilement, et ne jouit, pour ainsi dire, que d'une sensibilité obtuse ; en un mot, le roi de la création descend au niveau de la brute.

Ces excès, longtemps continués, en enlevant journellement une partie de leurs forces aux organes génitaux, les appauvrissent suffisamment pour les empêcher de remplir convenablement leurs fonctions.

La gastronomie poussée à l'excès agit donc de deux manières différentes sur le sens génésique ; en d'autres termes, elle porte atteinte à deux conditions du coït 1° aux désirs vénériens, 2° à l'érection de la verge.

C'est donc par conséquent sur ce double terrain que doit marcher la thérapeutique.

Mais avant de rien entreprendre, il est d'une absolue nécessité qu'une vie régulière et frugale ait succédé aux excès qui ont donné naissance à l'impuissance ; la fonction digestive sera ramenée à un type normal, et pour cela faire, le régime alimentaire sera réglé sur l'état sain ou morbide des voies digestives.

Cette condition remplie suffit, dans beaucoup de cas, pour réveiller tout à la fois les désirs vénériens et l'énergie de la verge ; il ne faut plus que savoir attendre et persister dans la sage et prudente hygiène qui constitue la médication.

Quelquefois cependant ces prescriptions sont insuffisantes, et alors il faut que la thérapeutique intervienne d'une manière plus active.

Pour rappeler les désirs éloignés, on recourt aux excitants moraux de toutes sortes : les conversations et les livres badins, les tableaux, les gravures et les marbres représentant des scènes d'amour, les spectacles grivois, les théâtres, les bals, les concerts, sont tour à tour mis en usage, et leur emploi judicieusement réglé sur les goûts du malade. Cette dernière circonstance est plus importante qu'on ne peut le croire, car la médication atteint un but diamétralement opposé à celui que l'on poursuit, si elle froisse un sentiment ou un instinct quelconque. J'ai vu l'exhibition que l'on faisait autrefois, à Paris, de femmes complétement nues, sous le nom de *tableaux vivants*, non-seulement inspirer une profonde répulsion pour ces femmes, dont la beauté des formes était cependant manifeste, mais encore produire une véritable anaphrodisie que perpétuait le souvenir de ce spectacle. J'ai également connu un malade qui, malgré son vif désir de lire le roman de *Justine*, de M. de Sade, n'a jamais pu surmonter le dégoût qu'il éprouvait dès les premières lignes de cet ouvrage.

Il faut donc, sous peine de manquer complétement son but, apporter une certaine circonspection dans le choix des excitants moraux, et ne se décider qu'après avoir minutieusement consulté les goûts, les habitudes et les tendances morales du malade.

En même temps que les désirs vénériens sont ainsi sollicités, on s'occupe à rappeler dans l'organe copulateur la virilité qui l'a fui, et l'on demande les indications de cette thérapeutique au mode de production, ou, si je puis ainsi dire, au mécanisme du mal qu'il s'agit de combattre.

L'impossibilité de l'érection est due, on se le rappelle, à la soustraction d'une partie de la vitalité qui anime les organes génitaux; le traitement doit donc se proposer de rendre à ces organes la vitalité perdue.

Tous les moyens capables d'attirer le sang vers les parties inférieures du tronc, et conséquemment dans l'appareil copulateur, doivent être mis en usage, car une circulation active et luxuriante porte avec elle la vie et l'énergie. C'est ici que la thérapeutique de Chaptal et de Gesner, dont j'ai déjà parlé (1), trouve une indication formelle, et que les immersions répétées de la verge dans une décoction de semence de moutarde, employées avec succès par ces praticiens, amènent les résultats les plus heureux; on peut même, ainsi que je l'ai fait plusieurs fois, substituer à ces lotions, dont l'action n'est pas assez rapide, de véritables sinapismes appliqués sur le périnée, et même sur la verge; il suffit de produire une simple rubéfaction, et l'on renouvelle tous les jours l'emploi de ces cataplasmes de moutarde.

Le même effet est également obtenu par la chaleur, soit sèche, soit humide, et sous ce rapport on doit avoir garde de se priver des bénéfices des bains chauds. Les bains froids, surtout au début de la médication, sont essentiellement contre-indiqués, à moins que quelque circonstance spéciale n'en réclame l'usage.

La flagellation, l'urtication, le massage et les frictions sèches sur les lombes font également partie de l'arsenal thérapeutique où le praticien peut puiser.

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(1) Voyez la page 154.

Tous ces moyens ne doivent point être employés simultanément; on les appelle tour à tour à son aide, au fur et à mesure que l'un d'eux échoue. Il est aussi telle disposition individuelle qui peut décider le choix du médecin, et il faut laisser à la sagacité de celui-ci les soins que cette décision comporte.

2° *Intempérance par excès de boissons.* — Les boissons se partagent en deux grandes classes : 1° les boissons fermentées; 2° les boissons non fermentées.

Les premières se subdivisent à leur tour en boissons fermentées simples et en boissons fermentées distillées; et les secondes en boissons aqueuses rafraîchissantes et en boissons aqueuses stimulantes.

Au point de vue spécial qui nous occupe, les boissons non fermentées ne sauraient m'arrêter longtemps, car si l'on comprend que les boissons aqueuses, prises en très-grande abondance, soient capables de débiliter l'organisme au point de produire l'impuissance, on conçoit difficilement les motifs qui pourraient amener de tels excès : le temps de l'inquisition et des pénitences exemplaires est bien loin de nous, et ce serait poursuivre un fantôme que de rechercher l'anaphrodisie par abus de l'eau introduite, bien entendu, dans les voies digestives.

Mais il n'en est pas de même pour les boissons alcooliques, au nombre desquelles je comprendrai toutes les boissons fermentées simples ou distillées, parce que leur action sur le goût et sur les facultés intellectuelles sollicite l'homme à en faire un usage trop souvent abusif.

L'alcool introduit dans l'estomac agit d'abord d'une manière irritante sur la muqueuse de ce viscère, et secondairement d'une manière excitante sur le système nerveux encéphalique; en conséquence et eu égard aux sympathies que j'ai déjà signalées comme reliant entre eux le cerveau, instrument de la vie morale, l'organe digestif et le sens génital, on doit comprendre la double influence exercée sur celui-ci par les excès de boissons alcooliques.

« Ceux qui boivent beaucoup de vin, mesmement tout pur, » dit Plutarque, sont lâches à l'acte de la génération, et ne » sèment rien qui vaille, ni qui soit de bonne trempe pour bien » engendrer; ains sont leurs conjonctions avecque les femmes, » vaines et imparfaites (1). » Cette observation est bien plus vraie que celle de Pline, qui prétend que le vin *rend gentil compagnon à l'endroit des dames.* L'enquête ordonnée à Londres en 1720, sur les causes de la diminution considérable que l'on avait constatée dans le nombre des naissances, et de laquelle il résulta que l'ivrognerie en était la cause principale, vient à l'appui de l'opinion de Plutarque, alors même que la science ne lui donnerait pas entièrement raison.

Et en effet, les excitations successives et souvent répétées que laissent après eux les excès alcooliques (2), finissent par émousser la sensibilité générale, de telle sorte que le sens génital se perd tout à la fois par l'abolition des désirs et par l'anéantissement de l'organe sensitif lui-même. L'ivrogne de profession n'a plus de goût que pour son vice, et le penchant qui l'entraîne le pousse à une brutalité dont la source n'est ni dans son cœur, ni dans son imagination, ces deux foyers du sens génésiaque.

Quelle que soit la boisson fermentée dont l'ivrogne fasse abus; que l'alcool soit à l'état de presque pureté, comme dans l'eau-de-vie et le trois-six ; qu'il soit mélangé à des substances plus ou moins astringentes, comme dans le vin; qu'il soit mêlé à des substances qui en relèvent le goût, comme dans toutes les liqueurs dont le nombre est considérable, les résultats définitifs sont les mêmes. La physionomie des ivrognes peut différer, ainsi que le montrent les buveurs de vin, de bière, d'absinthe, etc.; mais les conséquences, sous le rapport qui nous occupe, sont parfaitement identiques : tous perdent, avec le sentiment de leur dignité, le stimulant moral qui pousse un sexe vers l'autre, et en même temps la sensibilité physique sans laquelle nos organes restent sourds aux impressions extérieures.

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(1) Traduction d'Amyot.

(2) L'alcoolisme a une physionomie dont j'ai parlé page 246, et qu'il ne faut pas confondre avec ses conséquences dont il est ici question. Au point de vue de l impuissance, il importe de bien distinguer l'*état actif* de l'alcoolisme qui peut exalter le sens génital, et l'*état consécutif*, qui amène toujours un affaiblissement de l'appareil copulateur.

Deux indications se présentent donc à la thérapeutique de l'impuissance par excès de boissons alcooliques : 1° rappeler les désirs mis en fuite; 2° ranimer la sensibilité locale engourdie.

Il est bien évident qu'avant d'entreprendre la médication spéciale au sens génital, il faut que le malade ait renoncé à ses habitudes de buveur, et qu'un traitement approprié et que je n'ai pas mission d'exposer ici, ait heureusement combattu les accidents généraux que l'ivrognerie détermine, tels que paralysie, démence, amaigrissement, cachexie, etc.

Quelquefois le retour à la sobriété et le traitement des accidents généraux suffisent pour ramener l'exercice normal des facultés génitales; ce résultat s'obtient surtout chez les malades dont l'intempérance n'a pas eu une longue durée, et dont la transformation s'est opérée au milieu de l'air pur et vivifiant de la campagne.

Cependant, malgré ces conditions favorables, l'impuissance survit quelquefois à toutes les autres conséquences de l'ivrognerie, et il est alors nécessaire de réveiller, comme chez les buveurs de profession, les désirs vénériens et la force virile engourdis.

Pour remplir la première indication, on recourra aux excitants moraux dont j'ai déjà parlé plusieurs fois, et l'on observera dans leur mise en pratique les conditions que j'ai indiquées comme indispensables à leur succès (1).

Quant à l'inertie de l'organe génital lui-même, il faut, pour la pouvoir combattre heureusement, se rendre compte des modifications pathologiques qui l'ont produite. S'il m'était permis de détourner un mot de sa signification précise, je dirais que, dans le cas dont il s'agit, l'affection est une *phlegmasie nerveuse chronique* déterminée, comme beaucoup de phlegmasies chroniques, par une succession plus ou moins rapide de stimulations.

Par conséquent, toute nouvelle stimulation, quelle que soit sa nature, est formellement contre-indiquée.

Mais si l'on réfléchit que les stimulations alcooliques se sont presque exclusivement fait sentir dans les centres nerveux, et surtout au cerveau, et que l'affaiblissement des extrémités a pu être amené par la privation de l'influx nerveux, dont le centre faisait une dépense trop grande par suite des stimulations dont il était le siége, on comprendra qu'il ne faut tenir dans une proscription absolue que les excitateurs généraux.

Et en effet la strychnine, la brucine, la voix vomique, etc., n'ont aucune action dans les circonstances qui nous occupent, quand elles n'aggravent pas les accidents qu'il s'agit de combattre.

Les excitateurs locaux, tels que l'électricité et l'acupuncture, ont une action plus certaine que les excitateurs généraux, mais il ne faut pas croire qu'ils réussissent d'une manière constante ; je les ai vus échouer assez souvent.

La médication qui a paru me donner les résultats les plus satisfaisants est la médication par le calorique, appliquée localement, soit sous forme de bains, soit sous forme de fumigations simples ou aromatiques. Pour obtenir ce dernier effet, le malade est assis sur une chaise percée, au-dessus d'un réchaud contenant quelques charbons enflammés sur lesquels on verse la poudre des aromates dont on veut faire usage. Ce mode d'excitation, dont j'ai déjà parlé ailleurs (1), doit être rappelé toutes les fois que l'occasion s'en présente, car il rend d'éminents services dans le traitement de diverses formes d'impuissance.

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(1) Voyez les pages 172 et 202.

Quelle que soit la médication que l'on ait appelée à son aide, et quelque assurée que paraisse la guérison obtenue, on ne doit jamais oublier que de tous les accidents produits par l'ivrognerie, l'affaiblissement génital est peut-être celui dont la récidive est la plus constante au moindre retour vers la vicieuse habitude. J'ai donné des soins à un sommelier de restaurant qui, à chaque excès de liqueurs alcooliques qu'il commettait, perdait tout énergie virile, et qui ne la recouvrait qu'avec la sobriété et après une ou deux fumigations aromatiques. Je le répète donc, la guérison n'est durable qu'au prix de la tempérance, et le médecin, ménager de son honneur, ne s'exposera pas aux chances d'une médication presque à coup sûr inutile, si le malade, en réclamant ses soins, ne fait qu'un *serment d'ivrogne*.

D. — *Excès intellectuels.*

« On a observé, dit de Lignac, que les mariages des gens de lettres n'étaient pas ceux qui rapportaient le plus à l'État : j'ai lu dans une fable inconnue aux anciens, a dit Dufresni, qu'Apollon s'étant marié un jour, l'Hippocrène tarit le lendemain. Un génie marié est un génie stérile. En effet, continue Dufresni, les productions de l'homme sont bornées ; il faut opter, de laisser à la postérité ou des ouvrages d'esprit ou des enfants. (*Amusements sérieux et comiques*, amusement 11e) (1).

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(1) Voyez la page 147.

La fable imaginée par Dufresni confirme l'allégorie des anciens, qui, pour exprimer l'éloignement des lettres pour les plaisirs de l'amour, ont représenté comme vierges Apollon et les neuf Muses, ses sœurs.

La Fontaine, fort compétent en ces sortes de matières, dit que :

> Un muletier, à ce jeu, vaut trois rois.

L'observation médicale est ici entièrement conforme à l'opinion des poëtes; s'il est vrai que les travaux de l'intelligence, poursuivis dans une mesure raisonnable et au milieu d'heureuses conditions hygiéniques, soient pour l'organe cérébral une bienfaisante stimulation dont l'influence se fait sentir jusqu'aux dernières ramifications du système nerveux, il n'est pas moins certain que les excès dans les travaux de l'esprit amènent, en dehors d'une foule d'actions qui peuvent plus ou moins retentir sur le sens génital, une débilité nerveuse générale, à laquelle les fonctions génératrices ne peuvent se soustraire.

Parmi les causes qui président aux maladies des gens de lettres, Tissot en mentionne deux principales qui doivent également m'arrêter un instant; ce sont : 1° la contention de l'esprit; 2° l'inaction du corps.

La contention d'esprit a deux modes d'action parfaitement distincts, et s'adresse tantôt à la partie morale et tantôt à la partie physique du sens génital.

Dans le premier cas, la contention d'esprit a pour résultat de détourner l'imagination du but que l'amour se propose, comme dans l'exemple suivant cité par l'auteur de l'article IMPUISSANCE du *Dictionnaire des sciences médicales* : « Peyrilhe rapportait dans ses cours l'observation suivante : Un mathématicien, profondément occupé de certains problèmes qu'il ne pouvait résoudre, s'oubliait près de son épouse chaque fois qu'il allait partager ses feux avec elle, c'est-à-dire que son imagination le reportant sur ses problèmes pendant l'acte, il lui était alors impossible d'éjaculer. Sa femme vint consulter ce médecin habile qui lui conseilla de produire chez son mari une ivresse joyeuse, et de saisir ce moment comme étant le plus propre à recevoir ses caresses. L'avis de M. Peyrilhe, rigoureusement observé, vint combler l'espoir des deux époux ; en un mot, le mari, arraché à ses profondes méditations, rentra dans tous ses droits. » (Maur, *thèse*, Paris, 1805.)

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(1) De Lignac, *De l'homme et de la femme*, etc. 1774, t. II, p. 47.

Quoique l'auteur de cette observation soit d'une sobriété de détails désespérante, on ne saurait admettre que l'impossibilité de l'éjaculation dont il parle fût analogue à cet état que j'ai appelé aspermatisme ; il est à croire, au contraire, qu'elle était due à la flaccidité de la verge, qui se produisait au moment où l'imagination cessait de présider à l'acte copulateur. Cet effet est très-commun, et il est peu d'hommes qui ne l'aient éprouvé, quel que fût le motif qui détournât l'esprit de l'opération amoureuse. L'impuissance qui en résulte, quoique très-réelle, est essentiellement passagère, et l'imagination, ramenée sur le théâtre de l'amour, peut incontinent reprendre ses droits et faire oublier son moment d'absence.

Mais les choses ne se passent pas toujours ainsi, et les préoccupations intellectuelles peuvent à ce point absorber l'esprit que l'imagination soit sans images et le consensus sans désirs. Newton et W. Pitt moururent vierges ; Kant haïssait les femmes ; Bacon remarque qu'aucun grand homme de l'antiquité ne fut très adonné aux plaisirs sexuels ; et les anciens, cachant les plus grandes vérités sous les plus ingénieuses allégories, avaient donné à Minerve, la déesse de la science, le surnom de femme sans *mamelles*, et ils la garantissaient des traits de l'Amour avec la tête de Méduse.

Cette influence de la contention d'esprit sur les désirs vénériens est connue de tout le monde, et beaucoup d'hommes, au milieu des circonstances de toutes sortes qui, dans les grandes villes surtout, les sollicitent à la débauche, ne doivent faire honneur de leur continence qu'aux préoccupations fiévreuses qui remplissent leur existence.

Au point de vue purement physique, les excès de travaux intellectuels exercent sur l'organisme une action débilitante constatée par tout le monde : « Le travail du cabinet, dit Rousseau, rend les hommes délicats, affaiblit leur tempéramment, et l'âme garde difficilement sa vigueur quand le corps a perdu la sienne. L'étude use la machine, épuise les esprits, détruit les forces, énerve le courage, rend pusillanime, incapable de résister également à la peine et aux passions (1). » Ramazzini n'est pas moins explicite : « L'union de l'âme et du corps, dit-il, est telle qu'ils partagent réciproquement le bien et le mal qui leur arrive; l'esprit est incapable de s'occuper quand le corps est fatigué par les exercices excessifs, et une application trop soutenue à l'étude détruit le corps, en dissipant les esprits animaux qui sont nécessaires à sa réparation (2). » Tissot, si compétent en pareille matière, explique, comme il suit, l'action du travail intellectuel sur le dépérissement de l'organisme : « Pour comprendre, dit-il, ces influences du travail de l'esprit sur la santé du corps, il suffit de se rappeler : 1° un fait que j'ai déjà indiqué, et que le sentiment apprend à toute personne qui pense et qui s'observe penser, c'est que le cerveau est occupé pendant que l'on pense; 2° que toute partie du corps qui est occupée se fatigue, et que si le travail dure trop longtemps, ses fonctions se dérangent; 3° que tous les nerfs partent du cerveau, et de cette partie précisément du cerveau qui est l'organe de la pensée et qu'on appelle le *sensorium commune;* 4° que les nerfs sont l'une des parties principales de la machine humaine, qu'il n'y a aucune fonction à laquelle ils ne soient nécessaires, et que, dès que leur action est dérangée, toute l'économie animale s'en ressent.

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(1) *Préface de Narcisse*, œuvres diverses, t. I, p 172.

(2) Ramazzini, *Opera omnia*, p. 648.

» D'après ces principes simples, chacun sentira que quand le cerveau est épuisé par l'action de l'âme, il faut nécessairement que les nerfs souffrent et que leur dérangement entraîne celui de la santé, et détruise enfin le tempérament sans qu'aucune autre cause étrangère y ait part (1). »

Il est donc incontestable que sous l'influence des excès du travail intellectuel, outre l'éloignement des désirs vénériens, la force virile s'affaiblit elle-même, et cela en vertu de la loi physiologique générale si bien indiquée par Tissot.

Mais, outre ces deux caractères qui sont communs à plusieurs autres espèces d'anaphrodisie, l'impuissance des hommes de cabinet s'accompagne, pour le moral, d'une hypocondrie, et, pour le physique, d'accidents du côté du système génito-urinaire, auxquels ne sont pas étrangères, ccmme l'indique Tissot, l'inaction et la position assise que les ouvriers de la pensée gardent trop longtemps.

L'inaction amène, en effet, des troubles dans les digestions qui réagissent sympathiquement sur l'organe cérébral; et la position assise livre aux congestions sanguines les organes contenus dans le bassin, par suite de l'obstacle matériel qu'elle oppose à la libre circulation dans les parties inférieures; aussi a-t-on toujours mis au nombre des maladies des lettrés, la dyspepsie, l'hypocondrie, la gravelle, les hémorrhoïdes, les engorgements de la prostate, etc., etc., affections qui ont toutes, comme on le sait, une influence fâcheuse sur l'énergie virile.

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(1) Tissot, *De la santé des gens de lettres*. Nouvelle édition augmentée de notes, par F.-G. Boisseau Paris, 1826, page 24.

Au moment où j'écris ces lignes, disais-je dans la première édition de cet ouvrage, je donne mes soins à un jeune homme de Bruxelles, âgé de vingt-sept ans, d'un tempérament bilioso-sanguin, dont l'impuissance s'accompagne d'accès assez fréquents de gastralgie, d'une hypocondrie profonde poussée jusqu'à des idées de mort, et de douleurs sourdes du côté du col vésical, suivies assez fréquemment d'une perte blanche que le malade confond avec des pertes séminales, et qui n'est que le résultat d'une sécrétion plus abondante de la prostate. Ce jeune homme a quitté, il y a dix-huit mois, le service militaire pour se livrer à des études métaphysiques; comme il obéissait, m'a-t-il dit, à une vocation irrésistible, il a sacrifié, avec toute l'ardeur d'un néophyte désireux d'apprendre, sa vie active et son sommeil réparateur, à la lecture des ouvrages de Leibnitz, Descartes, Malebranche, Spinosa, etc., etc. Après six mois d'un changement aussi radical dans les habitudes et le mode d'existence, des douleurs vagues d'abord, mais ensuite plus prononcées, se firent sentir du côté de la prostate, et leur plus grande acuité, qui correspondait toujours à une augmentation des excès du travail intellectuel, était tout à la fois le signal d'une sécrétion plus abondante de mucus prostatique, et d'une impossibilité d'érection, malgré l'aiguillon de désirs vénériens très-réels. Bientôt des accidents nerveux apparurent du côté de l'esprit et furent promptement suivis d'un amaigrissement général, d'une teinte terreuse de la peau et d'un changement complet dans le caractère gai et les idées riantes du malade.

Fidèle au précepte de Tissot et à celui de tous les auteurs qui ont écrit sur la santé des gens de lettres, j'arrachai le malheureux à ses livres et à ses philosophes favoris; j'exigeai le retour à la vie active d'autrefois, j'imposai les exercices corporels en plein air et surtout à la campagne, et je prescrivis un régime analeptique, secondé par une cure aux eaux de Spa. Sous l'influence de cette simple hygiène, une saison d'été suffit au malade pour renaître au monde, à ses espérances et à ses plaisirs ; malheureusement l'hiver, en le chassant de la campagne, l'a ramené à Paris, où il a retrouvé ses livres, qu'il a cru pouvoir reprendre sans crainte d'une rechute; mais cette confiance ne s'est point justifiée, et dans le courant de mars, c'est-à-dire trois mois après la reprise de ses études, le malade vint de nouveau réclamer mes soins et m'accusa les mêmes accidents que ci-dessus, mais à un degré moindre.

Les moyens hygiéniques précédemment employés furent repris, et amenèrent des résultats aussi heureux que la première fois.

A défaut de cette observation, l'expérience et la raison commandent de n'entreprendre aucune médication, si, au préalable, on n'a pas enlevé le malade à ses livres, à ses méditations, en un mot à la cause même de son mal. Cette condition indispensable est, il en faut convenir, la plus difficile de toutes à réaliser. Tissot, dont le témoignage est d'un grand poids en pareille matière, ne cache pas ses craintes à cet égard : « La première difficulté, dit-il, qu'on a à vaincre avec les gens de lettres, quand il s'agit de leur santé, c'est de les faire convenir de leurs torts ; ils sont comme les amants qui s'emportent quand on ose leur dire que l'objet de leur passion a des défauts ; d'ailleurs, ils ont presque tous cette espèce de fixité dans les idées que donne l'étude, et qui, augmentée par cette bonne opinion de soi-même, dont la science enivre trop souvent ceux qui la possèdent, fait qu'il n'est point aisé de leur persuader que leur conduite leur est nuisible : avertissez, raisonnez, priez, grondez, c'est souvent peine perdue. Ils se font illusion à eux-mêmes de mille façons différentes : l'un compte sur la vigueur de son tempérament, l'autre sur la force de l'habitude; celui-ci espère échapper à la punition, parce qu'il n'a pas encore été puni; celui-là s'autorise d'exemples étrangers qui ne prouvent rien pour lui; tous opposent au médecin une obstination qu'ils prennent pour une] fermeté dont ils s'applaudissent, et dont ils deviennent les victimes; bien loin de redouter le danger à venir, ils ne veulent quelquefois pas même sentir le mal présent, ou plutôt, le plus grand des maux pour eux, c'est la privation du travail; ils ne comptent pour rien les autres, moyennant qu'ils se soustraient à celui-là (1). »

Lorsque la raison a triomphé de cette obstination fâcheuse et aplani cette première difficulté, il suffit, dans la·majorité des cas, de suivre la conduite que j'ai tenue dans l'observation citée plus haut; les forces se rétablissent à mesure que les digestions deviennent meilleures, et l'énergie physique s'accroît de tout ce que ne dépense plus l'élément moral.

La médication hydro-minérale et l'hydrothérapie offrent ici des ressources précieuses qu'il n'est pas permis de dédaigner : les eaux alcalines, quand il n'y a aucune complication de diathèse, seront opposées aux troubles dyspeptiques, et parmi elles on donnera la préférence aux sources froides acidules et dans lesquelles se rencontre un élément réparateur, comme le fer, le manganèse, etc.; Pougues, quelques sources de Vals et de Vichy, Luxeuil, Spa, Orezza solliciteront le choix du médecin, selon les phénomènes prédominants; les douches froides, d'une durée très-courte, seconderont admirablement l'action des eaux alcalines, et concourront, avec une meilleure assimilation amenée par la boisson des eaux minérales, à relever les forces de l'organisme et, par suite, celes de l'appareil génital.

Quand la plasticité est assez complète pour n'avoir plus à redouter un excès d'excitabilité nerveuse, on recourt avec avantage aux bains de mer ou de rivière, dont on détermine le nombre et la durée d'après la constitution et l'état nerveux du malade.

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(1) Tissot, *loc cit*, p. 136

Dans tous les cas, je le répète, la médication par excellence, celle dont on doit attendre le plus de succès, est le repos de l'esprit, l'exercice corporel en plein air, un régime analeptique, tonique, fortifiant et quelquefois excitant.

E. — *Abus de l'appareil génital.*

Le sens génital, comme tous les appareils de l'économie animale, est appelé à remplir une mission à laquelle, sauf quelques cas exceptionnels, nous ne pouvons nous soustraire. C'est en vain que l'homme essaie de se révolter contre l'empire de cette loi; la nature, plus forte, brise la résistance de sa volonté, ou lui impose des maux infinis comme châtiment de sa désobéissance. Buffon raconte les souffrances d'un curé de la Réole, victime de la chasteté, et dont l'histoire trop connue ne saurait ici trouver place.

Dans l'intérêt de l'harmonie physiologique, qui n'est pas autre chose que l'énergie relative de toutes les fonctions, a nature a établi pour chacune d'elles un type normal, différent, il est vrai, selon les individualités, mais basé sur l'ensemble de toutes les fonctions, et en deçà et au delà duquel apparaît le désordre, la maladie.

La fonction génitale ne fait pas exception à cette règle immuable, et son abstention absolue ou son exercice immodéré, que l'on désigne sous les noms de continence et d'incontinence, entraînent à leurs suites des désordres nombreux, dont je ne dois ici considérer que ceux dont l'action néfaste s'exerce sur la puissance virile.

1° *Excès de continence.* — Les excès de continence, et même la continence absolue, n'ont pas, chez tous les hommes la même influence sur le sens vénérien : chez les uns, cette continence irrite les désirs, tandis qu'elle les abat chez les autres. C'est affaire de tempérament et de constitution. Chez les individus d'un tempérament énergique, chez ceux dont l'imagination a des élans irrésistibles, les désirs vénériens ont une puissance étrange qui s'alimente de rêves incessants dans le silence de la solitude, et qui trouve, dans les combats mêmes que la raison livre à la folle du logis, comme dit Montaigne, des excitants nouveaux à l'œuvre de la chair. L'histoire de toutes les religions nous offre des exemples de martyrs de leur foi, et, dans l'Iliade chrétienne, saint Jérôme est resté comme le type des tristes victimes de la continence et de la chasteté.

Cependant les constitutions les plus vigoureuses ne sont pas toujours une garantie contre les atteintes anaphrodisiaques de la continence; Galien avait déjà remarqué que les chanteurs et les athlètes, qui, de son temps, se vouaient à la chasteté pour conserver leurs forces, avaient les parties génitales *exilia et rugosa* comme les vieillards. « Un de mes amis, dit-il, étant venu me consulter à l'occasion d'un priapisme, suite d'une continence prolongée, s'étonna de ce qu'un athlète se trouvait placé, par la même cause, dans une circonstance toute opposée. *Miror, inquit, quod huic (athletam indicans) ob continentiam rugosus, collapsusque penis evaserit : mihi vero ex quo continentiam servare studui, evenerit contrarium.* Galien ajoute que ceux, au contraire, qui, dans leur jeunesse, s'étaient abandonnés sans réserve aux jouissances de l'amour, avaient les parties génitales extrêmement développées (1). »

Le médecin de Pergame ne fait qu'affirmer une loi physiologique dont la vérité n'est contestée par personne, et qui fixe l'intime corrélation existant entre le développement d'un organe et l'exercice de sa fonction. Cette loi, dont un exemple frappant est le défaut de symétrie parfaite entre les deux parties latérales du corps par suite du plus grand usage d'un côté que de l'autre, peut se traduire de la manière suivante : Plus un organe ou un appareil d'organes fonctionne, plus il possède une nutrition active, et plus, par conséquent, il s'accroît en volume et en énergie ; *vice versâ*, moins un organe ou un appareil d'organes fonctionne, et moins il jouit d'une nutrition abondante, et plus, par conséquent, il est exposé au dépérissement et à l'atrophie.

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(1) *Dictionnaire des sciences médicales*, art. CHASTETÉ ; Paris.

Si cette loi physiologique n'est pas un mensonge, il faut en faire l'application à l'appareil génital : chez les individus, en effet, qui n'exercent point les organes copulateurs et dont même l'imagination paralysée n'éveille pas le feu sacré des désirs dont la présence supplée, jusqu'à un certain point, l'exercice de la fonction, en entretenant dans les organes l'excitation et la vie, chez ces individus, dis-je, lâches de corps et d'esprit, l'appareil génital, par suite du repos forcé auquel il est condamné, éprouve une sorte d'arrêt de développement, et reste, comme chez les enfants, à l'état embryonnaire.

J'ai raconté ailleurs (1) un exemple de petitesse extrême de la verge, à laquelle je parvins cependant à donner un volume convenable par le seul exercice de la fonction copulatrice, grâce à la persistance, chez le malade, des désirs vénériens. Mais cette circonstance heureuse ne se rencontre pas toujours, et il est assez ordinaire que, dans l'espèce d'impuissance qui m'occupe, on ait à réveiller tout à la fois l'activité génésique du moral et la force annihilée de l'organe copulateur.

Cette disparition des désirs et cette inertie du pénis peuvent se produire, sous l'empire de la continence, sans atrophie de la verge et des testicules, comme on va le voir par l'exemple que j'ai sous les yeux, au moment où je rédige cet article.

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(1) Voyez la page 93.

M. X..., d'un tempérament lymphatico-nerveux, grand, d'une bonne constitution et d'une santé parfaite, après plusieurs années passées dans l'état militaire, se retira dans ses terres, dans le district deMoscou, vers l'âge de vingt-sept ans. Il ne tarda pas à se marier; il n'a jamais éprouvé pour sa femme que des sentiments d'estime, car son mariage, ainsi qu'il arrive souvent dans les aristocraties de tous les pays, avait été dicté, moins par l'amour et les sympathies, que par des convenances de fortune, de position et de nom.

Cependant il remplit ses devoirs d'époux qui furent suivis de la naissance d'une fille.

A la suite de ses couches, la femme fit une longue maladie qui, pendant près de deux ans, éloigna l'époux de la couche conjugale; cet isolement du mari ne fut distrait par rien, ni par les charmes de l'intimité, ni par les plaisirs de la vie du monde; éloigné de tout centre d'habitation, enfermé dans une propriété dont l'étendue ne permettait aucun rapport de voisinage, M. X... fut condamné non-seulement à une continence complète, mais encore au manque absolue de toute excitation morale.

De plus, cet isolement fut aggravé par de graves préoccupations causées par l'infidélité d'un intendant, dont la gestion déloyale faisait craindre à M. X... la perte d'une partie de sa fortune.

Deux années se passèrent ainsi, au bout desquelles, rassuré sur sa position financière et sollicité par le retour de sa femme à la santé, M. X... voulut reprendre ses droits et ses devoirs d'époux.

Malheureusement cette volonté n'avait pour mobile que l'ambition de perpétuer un nom et d'avoir un enfant mâle; elle ne trouva à sa disposition ni désirs vénériens, ni énergie copulatrice.

M. X... était impuissant au moral et au physique.

Cette impuissance était d'autant plus complète qu'elle ne s'accompagnait ni de rêves lascifs, ni, par conséquent, de pollutions voluptueuses, ni d'érection anormale, pas même par suite de la plénitude de la vessie.

Un médecin de Moscou, après un traitement insignifiant qui ne produisit aucun effet, m'adressa le malade qui, depuis trois semaines, est soumis à mes soins.

Le traitement, jusqu'à présent, a eu essentiellement pour but de réveiller l'excitabilité morale, et je me suis conformé à la règle que j'ai indiquée au chapitre de l'impuissance idiopathique avec absence de désirs (1).

L'amélioration qui s'est déjà produite dans la tournure d'esprit de M. X..., si je puis ainsi dire, soutient l'espoir que j'ai puisé dans l'état antérieur du malade, puisqu'il est père d'une petite fille.

Cependant les antécédents copulateurs ne sont pas toujours un indice pour les résultats de la thérapeutique ; j'en donnerai pour preuve le fait suivant, relatif à un malade qui, non-seulement n'avait jamais exercé le coït, mais qui s'était livré à la masturbation, et qui pourtant guérit dans un espace de temps relativement court.

M. X..., d'origine anglaise, grand, fort, bien constitué, s'était modérément adonné à l'onanisme pour éviter, par crainte de la syphilis, le commerce des femmes, quand à l'âge de vingt-deux ans, toujours vierge et toujours aussi pusillanime à l'endroit de la vérole, il fut envoyé dans les Indes, pour diriger une vaste plantation. Éloigné de toute ville, n'ayant des rapports qu'avec des nègres et des négresses, il persista plus que jamais dans sa continence, toujours par la peur de la syphilis, et aussi pour ne pas compromettre son autorité. Au début de son exil, il se livra quelquefois, comme en Angleterre, aux pratiques de la masturbation; mais bientôt il les abandonna complétement, soit par l'effet de l'absence de toute excitation extérieure, soit à cause de ses occupations fatigantes, soit par l'effet même de sa continence.

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(1) Voyez la page 130.

Cet état dura dix ans au bout desquels il revint en Europe, toujours fort, n'ayant subi aucune maladie, et indemne de cette décrépitude précoce qu'amène souvent le séjour trop prolongé dans les pays chauds.

Seulement il avait complétement perdu l'appétit vénérien, et, malgré sa volonté d'entrer en commerce avec les femmes, il n'éprouvait qu'une indifférence profonde, qu'une grande apathie morale, mêlée de regrets.

Pourtant la compagnie des femmes et les attouchements amoureux ne trouvaient pas ses organes entièrement insensibles; mais ces excitations étaient insuffisantes, en l'absence de l'incitateur intime, à produire l'érection et, par suite, la volupté.

C'est dans cet état qu'il vint me consulter.

Tout l'appareil génital était parfaitement constitué, et aucune partie, ni testicules ni verge, ne portait la trace d'une atrophie qu'une si longue continence pouvait produire.

La médication à instituer devait s'adresser tout à la fois au moral et au physique du malade.

Sous le premier rapport, j'observais une gradation lente dans le choix des excitants, afin de prévenir le dégoût qu'inspirent toujours, aux esprits froids, des conversations trop libres, des lectures trop licencieuses, des peintures trop nues et des spectacles trop décolletés; ce ne fut que peu à peu et après de longs tâtonnements, que je permis la fréquentation des femmes galantes qui devaient réaliser, en les complétant, les premières incitations amoureuses, nées sous des influences progressivement excitatrices.

Comme médication physique, je m'adressai d'abord à l'électricité, dans la pensée d'activer le travail sécrétoire des testicules, et, par suite, d'éveiller tout à la fois le sens génital et son incitateur interne.

Au bout de quelques séances, pendant lesquelles j'avais promené le pinceau électrique sur les testicules d'abord, et ensuite sur la face dorsale de la verge et surtout à la base du pénis, entre celle-ci et le scrotum, une demi-érection se produisait sous l'instrument même, bien avant que les désirs vénériens fussent sortis de leur torpeur.

Je persévérais dans cette médication que je complétais par le phosphore à l'intérieur, et par des fumigations aromatiques que je faisais diriger sur le périnée et les organes génitaux.

Après deux mois environ de ce double traitement, moral et physique, poursuivi avec prudence et régularité, le malade sortit de l'indifférence amoureuse dans laquelle il avait si longtemps vécu, et recouvra toutes ses facultés copulatrices qui devinrent, comme je l'ai su plus tard, d'autant plus énergiques qu'elles avaient été condamnées à un long repos.

Les deux observations que l'on vient de lire montrent que l'impuissance, caractérisée surtout par l'absence des désirs vénériens, exige, avant toutes choses, un traitement moral sagement et méthodiquement dirigé.

Je ne reviendrai pas ici sur les moyens d'excitation morale que j'ai longuement exposés dans un autre chapitre de cet ouvrage; mais je ferai remarquer que si la continence est le résultat, non de la volonté, mais de l'apathie du tempérament, il faut de toute nécessité recourir, en même temps, à une médication fortifiante, dans laquelle le fer et le quinquina à l'intérieur, et les douches et les bains froids dans l'eau courante, et surtout dans la mer, occupent une large place.

Quant à la médication locale, à celle qui a plus spécialement pour objet de relever les forces viriles affaiblies, je n'en sais pas de meilleure que l'exercice même de la fonction.

Cependant, pour arriver à la possibilité de cet exercice, à la réalisation du premier coït, on se trouve bien de recourir à l'intérieur et en frictions, concurremment avec la médication générale par les ferrugineux et les toniques, aux agents que les anciens désignaient plus spécialement sous le nom d'aphrodisiaques : le phosphore, l'acide formique, l'aristoloche, l'armoise, la garance, la myrrhe, la rue, la sabine, le safran, etc.; on peut, dans quelques circonstances, mettre à profit la stimulation que quelques agents exercent sur les organes urinaires, tels que les cantharides, les acétates de chaux, de potasse et de soude, l'alkékenge, le câprier, la racine de fenouil, etc., etc.

Mais il ne faut pas se faire illusion et placer trop d'espérances sur une médication dont les effets sont souvent douteux et toujours lents à se produire; car chez les natures apathiques, qu'on ne l'oublie pas, la continence prolongée a souvent déterminé un arrêt de développement de l'appareil génital, auquel il n'est pas toujours facile de remédier, surtout quand l'imagination du malade ne seconde pas la médication ou que le sujet a atteint déjà un certain âge.

2° *Excès d'incontinence. Excès vénériens.* — Les excès vénériens sont de toutes les causes physiques d'anaphrodisie la plus fréquente, sinon la plus terrible. L'impuissance qu'ils déterminent n'est quelquefois que passagère, mais dans quelques autres circonstances, au contraire, elle persiste plus ou moins longtemps, et peut même devenir définitive, si les organes testiculaires sont épuisés et flétris.

Je vais examiner les conditions diverses de chacun de ces états; mais il me paraît utile, avant d'entrer en matière, de vider une question, à laquelle les gens du monde et beaucoup de médecins attachent un certain intérêt : je veux parler de la différence des résultats amenés par les excès de coït et par les excès de masturbation.

S'il en fallait croire à peu près tous les auteurs qui ont écrit sur l'onanisme, les excès de ce vice seraient beaucoup plus funestes que les excès de coït ; les raisons qu'ils font valoir en faveur de cette opinion ne me paraissent ni réelles ni fondées, et l'on peut même dire que, toutes choses égales d'ailleurs, la copulation détermine une excitation générale, un ébranlement dans tout le système nerveux que la masturbation ne saurait produire dans le silence de son isolement.

Il est incontestable que l'on rencontre un plus grand nombre de victimes de l'onanisme que du coït, mais cette différence en faveur de la masturbation tient à plusieurs causes :

1° Parce que la masturbation est le plus fréquemment exercée à un âge où les organes génitaux n'ont point encore acquis leur développement complet, et que, par conséquent, ils n'ont à opposer à la fatigue qu'on leur impose qu'une très-faible force de résistance ; tandis que le coït est ordinairement l'apanage de l'homme arrivé, sinon à une évolution parfaite, du moins à un degré suffisant d'énergie ;

2° Parce que les excès d'onanisme sont plus facilement exécutables que les excès du coït, en ce que pour les premiers une volonté seule suffit, alors que pour les seconds il faut l'accord de deux volontés et la réunion de certaines circonstances dont le masturbateur parvient facilement à s'affranchir ; ainsi, le masturbateur n'a pas toujours besoin de la solitude pour satisfaire ses vicieux penchants ; on en a vu qui contentaient leurs habitudes sous les yeux de leurs maîtres ou de leurs parents, soit en croisant leur jambes et en balançant leurs corps, soit avec la main placée dans la poche de leur pantalon, soit en frottant l'organe voluptueux contre un coussin, un meuble, etc., etc.; le coït, au contraire, exigeant l'isolement le plus absolu, a bien moins que l'onanisme d'occasions de se satisfaire, sans parler de l'accord parfait qui doit exister entre l'homme et la femme.

C'est surtout à ces deux circonstances, et non à une différence d'action du coït et de la masturbation, qu'il faut rapporter les résultats notés par les auteurs ; pour moi, je suis parfaitement convaincu qu'au milieu de conditions égales, les excès d'onanisme et les excès de copulation amènent des effets identiques, soit sur l'économie tout entière, soit seulement sur l'appareil de la génération.

D'ailleurs, plus qu'en toute autre occurrence, l'appréciation de ces effets ne peut être établie d'une manière absolue, car telle incontinence qui sera excès pour l'un, sera pour l'autre le simple exercice de la fonction. Les tempéraments, l'état de santé ou de maladie et les passions jouent ici un très-grand rôle, et sollicitent toute l'attention du médecin.

Je me suis déjà suffisamment expliqué ailleurs (1) sur la valeur de chacune de ces circonstances, pour qu'il soit inutile d'y revenir ici.

En cette place, je dois admettre que l'acte vénérien a été accompli d'une manière abusive, c'est-à-dire en dehors des limites posées à l'individu ou par les forces de son organisme, ou par l'existence d'une maladie, ou par l'état de ses facultés intellectuelles, etc., et que ces excès ont amené l'impuissance.

L'impuissance produite par une pareille cause est rarement indépendante de tout autre phénomène morbide : tantôt elle est liée à un affaiblissement général de l'économie, et tantôt elle est accompagnée de lésions anatomiques locales dont elle paraît n'être qu'une conséquenee.

La première, presque toujours passagère, est rarement au-dessus des ressources de l'art ; la seconde, au contraire, résiste davantage aux moyens thérapeutiques, et peut même, dans quelques cas, les défier complétement.

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(1) Voyez les pages 67 et suivantes.

Je vais examiner à part ces deux formes d'anaphrodisie ; car leur distinction, au point de vue du traitement, est de la plus haute importance.

A. *Impuissance par excès vénériens sans lésions anatomiques locales.* — Il ne peut être question ici, on le comprend, de cette impuissance qui suit une ou plusieurs nuits de débauche ; l'impossibilité du coït n'est point alors une maladie qui réclame les secours de la médecine ; c'est pour le physique une fatigue que le repos fait disparaître, et pour le moral une satiété que la continence dissipe ; la sécrétion spermatique, à l'âge surtout où elle est la plus active, a bientôt réparé les pertes auxquels ces excès ont entraîné l'organisme, et l'individu ne tarde pas à rentrer dans toute la plénitude de ses droits.

Cependant ce retour à la vie sexuelle se fait quelquefois attendre, et le malheureux dont l'espoir est déçu tombe alors dans un découragement qui peut à lui seul amener l'impuissance.

Dans ces cas, moins rares qu'on ne croit, l'impossibilité du coït ne se trahit par aucun autre symptôme que par la non-érection de la verge : les désirs n'ont pas fui, et l'émaciation et le dépérissement dont je parlerai tout à l'heure n'existent pas. Le médecin n'a, pour éclairer sa religion, que les seuls aveux du malade, dont la véracité d'ordinaire ne saurait être mise en doute.

Cet état, par lui-même, n'a aucune gravité, et disparaît assez facilement par le repos de l'organe et l'emploi de quelques moyens excitants chez les malades dont l'esprit est resté inaccessible à la crainte ; mais il peut se prolonger plus ou moins longtemps chez ceux dont le moral est troublé par les appréhensions d'une impuissance complète.

Plus qu'en toute autre circonstance, les gens du monde dont la verge entre difficilement en érection après des excès vénériens, s'abandonnent à des terreurs imaginaires et se croient atteints de toutes les infirmités dont quelques auteurs, et Tissot entre autres, leur ont fait un si lugubre tableau. Le médecin ne doit point partager de semblables appréhensions; il les doit attaquer en face et les combattre avec toute l'autorité que lui donne la science. S'il caresse les terreurs de son malade, celui-ci, soyez-en convaincu, se croit bientôt la victime de toutes sortes de fléaux; son imagination troublée lui fait voir des flocons blanchâtres dans ses urines; elle lui fait prendre pour une perte séminale le mucus prostatique qui vient humecter le méat urinaire sous l'empire d'une excitation amoureuse; elle lui crée mille fantômes plus absurdes les uns que les autres et qu'il est quelquefois très-difficile de dissiper. Je me rappelle un de ces malheureux qui se croyait atteint d'un sarcocèle, parce que, me disait-il, les abus qu'il avait faits de ses organes génitaux avaient amené dans les testicules, par suite du travail forcé de la sécrétion spermatique, une inflammation chronique qui avait bien pu dégénérer en cancer.

Il faut, en pareille occurrence, je le répète, que le médecin ne s'abandonne à aucune faiblesse, à aucune condescendance; il ne doit point, comme dans quelques occasions que j'ai eu soin de spécifier, user de ruse; la ruse est ici funeste, parce qu'elle fortifie la croyance du malade en des lésions profondes et presque inaccessibles aux ressources de l'art.

D'ailleurs, quand son effroi ne lui a pas créé des images trop sombres, le malade ne tarde pas à revenir de son erreur, et la confiance la plus entière renaît en son âme au plus petit retour de la force virile.

Pour obtenir ce résultat, la première condition est de soustraire le sens génital aux excitations amoureuses; tout ce qui peut éveiller les désirs vénériens, moralement ou physiquement, est éloigné, et l'on respecte, avec un soin égal, la quiétude de l'âme et le repos des organes.

Concurremment avec ce calme général, et comme pour forcer la nature à en sortir elle-même, une nourriture fortifiante, analeptique, est employée; on se trouve bien de l'usage des gelées de viande ou de volailles aromatisées avec des épices, du chocolat à la vanille, du sagou, du salep assaisonnés avec le vin, la cannelle, la muscade, les clous de girofle, etc., des rôties au sucre ou au vin, etc., etc. Des promenades à la campagne, surtout à cheval ou en voiture, complètent cette hygiène, qui suffit, dans la majorité des cas, pour rendre au malade toute sa vigueur première.

Cependant, si ces moyens sont insuffisants, et s'il faut recourir à une médication plus active, on commence par administrer, en guise de tisane, une décoction de bois de quinquina, et on soumet pendant quelque temps le malade à l'hydrothérapie.

Enfin, s'il est nécessaire d'agir d'une manière plus énergique encore, on peut, selon l'occurence, avoir recours à l'acide formique, au phosphore et même aux cantharides, soit à l'intérieur, soit en frictions sur le périnée et à la base de la verge. Mais, je le répète, cette impuissance sans altération générale, sans lésions anatomiques, et produite seulement par quelques excès vénériens, est essentiellement passagère et réclame rarement une médication active.

Il n'en est pas ainsi de celle qui, découlant de la même source, s'accompagne du dépérissement de l'organisme, et semble être une conséquence fatale de l'anéantissement qui frappe toutes les fonctions; c'est qu'en effet l'impuissance, dans ce cas, est autant le résultat de l'affaiblissement général que de la fatigue des organes génitaux, et l'on peut dire que, si elle a son point de départ dans les excès vénériens, elle est entretenue et singulièrement aggravée par l'état déplorable de l'économie tout entière.

Le système nerveux est alors malade par les secousses successives que lui ont d'abord imprimé les abus du sens vénérien, et ensuite par l'excitabilité qui ne fait jamais défaut aux états anémiques.

Mais ces désordres, en dehors de l'affaiblissement génital auquel n'est pas étranger l'excès même de cette excitabilité, peuvent se limiter aux fonctions organiques du système, et laisser dans leur intégrité les facultés intellectuelles et affectives. Aussi n'est-il pas rare de voir persister les attributs de l'esprit chez ceux-là même qu'une trop fréquente satisfaction des désirs vénériens a conduits au marasme et à l'impuissance.

D'autres fois, les facultés intellectuelles et affectives sont entraînées dans le naufrage des fonctions organiques, et seuls les désirs érotiques surnagent, comme chez quelques idiots et les crétins des Alpes. La position du malheureux ainsi frappé est bizarre : la mémoire est toujours plus ou moins profondément altérée; l'âme, châtrée de tout sentiment, languit dans l'indifférence, et l'organe sexuel, atteint dans sa force, ne peut plus réagir contre les excitations qui le sollicitent; aussi, dans cette absence des plus nobles attributs de l'homme, les désirs vénériens ont quelque chose de bestial qui, s'ils pouvaient être contentés, ravaleraient celui qui les manifeste au niveau de la brute. L'irritabilité dans laquelle se trouve le système nerveux aiguillonne ces désirs et change en véritable torture l'impossibilité de les satisfaire. J'ai vu plusieurs de ces malheureux condamnés à fuir le monde, et à cacher leur hébétement dans une solitude où ils pouvaient tout à leur aise maudire leur fatale destinée. L'un d'eux, entre autres, portait des regards de convoitise sur toutes les femmes, laides ou jolies, qu'il rencontrait, et il lui était impossible de fixer dans ses souvenirs l'image de l'une d'elles. J'allai avec lui aux Tuileries un jour où la mode fait de ce jardin public un lieu de réunion pour les femmes élégantes de Paris, et, pendant une heure à peu près que nous y restâmes, il éprouva des désirs constamment nouveaux : il lui semblait toujours voir pour la première fois les personnes devant lesquelles nous avions passé à plusieurs reprises, et sur lesquelles j'avais attiré son attention dès notre entrée dans le jardin. L'émotion ne se prolongeait jamais au delà de la sensation ; l'impression produite par une femme s'effaçait presque instantanément par la vue d'une autre femme, et sa mémoire perdait le souvenir de celle-ci à la rencontre d'une nouvelle. Cette mobilité d'impressions faisait le désespoir du malade, et le força enfin à se retirer dans une campagne qu'il possédait dans le département de l'Oise, et dont la solitude, en lui permettant l'observation rigoureuse d'un traitement, le rendit plus tard au monde de Paris, auquel l'attachaient sa fortune et sa position sociale.

Dans d'autres circonstances enfin, les désirs vénériens ont subi la destinée de la force virile, et, comme elle, se sont noyés dans les excès de la luxure et du coït. L'homme n'est plus alors que l'ombre de lui-même ; automate animé par un reste de vitalité, il n'ouvre ni son esprit, ni son âme, ni ses sens à ce que la nature a de plus sympathique, à ce que la femme a de plus séduisant. C'est à lui que peuvent s'appliquer, sans parabole, ces paroles de l'Écriture : *Oculos habet et non vidit, aures habet et non audiit*, etc.

Quels que soient les phénomènes qui, du côté du moral, accompagnent les actions vitales résultant d'excès vénériens, la première et la plus importante indication à remplir est la réparation des pertes éprouvées par l'économie ; ce résultat n'est pas toujours facile à atteindre, surtout au début de la médication, parce que l'excessive irritabilité de l'estomac ne permet pas de recourir à une alimentation franchement analeptique. Il faut ordinairement commencer par un régime lacté et n'arriver que progressivement à une nourriture tout à la fois plus substantielle et plus excitante.

Tissot recommande de faire prendre au malade du lait froid coupé avec l'eau de Spa : « Un grand avantage, dit-il, des eaux de Spa et du quinquina, c'est que leur usage fait passer le lait. M. de la Mettrie nous a conservé une belle observation de M. Boerhaave. *Ce duc aimable*, je traduis mot à mot, *s'était mis hors du mariage, je l'ai remis dedans par l'usage des eaux de Spa avec le lait.* (*Amabilis ille dux se possuerat extra matrimonium ; ego illum reposui intra* (1). » (Supplément à l'ouvrage du *Pénélope*, ch. I, liv. XXXV.)

C'est dans les circonstances dont je parle que les anciens auteurs recommandaient de faire coucher le malade avec une personne saine et à vitalité exubérante, et de le nourrir avec du lait de femme. J'ai, dans un autre chapitre (2), suffisamment fait ressortir l'inanité, le danger et l'immoralité de ce moyen, pour qu'il soit inutile d'y revenir ici.

La médecine, grâce au ciel ! possède assez de ressources pour ne pas regretter de semblables expédients, et elle a, dans le quinquina, les toniques, les ferrugineux, les eaux minérales, l'hydrothérapie, les bains de mer, etc., des armes puissantes, si elle sait les manier avec prudence et avec fermeté. « Un homme, dit de Lignac, s'était tellement épuisé avec une courtisane, qu'il était incapable d'aucun acte de virilité ; son estomac était aussi extrêmement affaibli, et le manque de nutrition et de sommeil l'avait réduit à une grande maigreur. Voici la méthode qu'employa Tissot pour procéder à la curation de cette impuissance : A six heures du matin, le malade prenait six onces (180 grammes) de décoction de quinquina, à laquelle on ajoutait une cuillerée de vin de Canarie ; une heure après, il prenait dix onces de lait de chèvre qu'on venait de tirer, auquel on ajoutait un peu de sucre et une once d'eau de fleur d'oranger. Il dînait d'un poulet rôti, froid, de pain et d'un verre d'excellent vin de Bourgogne avec autant d'eau. A six heures du soir, il prenait une seconde dose de quinquina; à six heures et demie, il entrait dans un bain froid, dans lequel il restait dix minutes, et au sortir duquel il entrait dans son lit. A huit heures, il reprenait la même quantité de lait; il se levait depuis neuf heures jusqu'à dix. Tel fut l'effet de ces remèdes, dit M. Tissot, qu'au bout de huit jours il me cria avec beaucoup de joie, quand j'entrai dans sa chambre, qu'il avait recouvré *le signe extérieur de la virilité*, pour me servir de l'expression de M. de Buffon. Au bout d'un mois, il avait presque entièrement repris ses anciennes forces (1). »

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(1) Tissot, *Onanisme*, art. III, sec. X, p. 202, 3ᵉ édit. Lausanne, 1765.

(2) Voyez les pages 197 et 198.

A côté de cette médication à laquelle je n'ai à adresser aucune critique, la médecine trouve aujourd'hui dans les eaux alcalines acidules (Pougues, Alet, les célestins de Vichy, etc.) le moyen de réveiller l'appétit et de régulariser les fonctions digestives, et dans les eaux ferrugineuses (Orezza, Forges, Passy, Spa, etc.) un puissant auxiliaire du régime analeptique.

D'autre part, les bains froids, l'hydrothérapie, les bains de mer, etc., sont des toniques généraux d'autant plus précieux, qu'ils respectent l'estomac dont le bon fonctionnement est une des premières conditions pour le rétablissement du malade.

A ces moyens ne se bornent pas heureusement les ressources de la thérapeutique, car ils ne sont applicables ni à tout le monde, ni en toutes saisons.

La matière médicale possède des apéritifs, des digestifs, des ferrugineux et des toniques qui peuvent marcher à côté des eaux minérales et de l'hydrothérapie; ils sont trop familiers à tout le monde pour qu'il soit nécessaire de les énumérer; il ne faut que les énoncer.

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(1) De Lignac, *De l'homme et de la femme*, etc. t. I, p. 306.

Ces moyens, joints à la privation totale des plaisirs vénériens, suffisent, dans la majorité des cas, pour réparer les désordres, généraux et locaux, produits par les excès de l'amour. Mais l'impuissance est, de tous les accidents, le dernier à disparaître, parce que, comme dans l'évolution physiologique, le sens génital n'entre en exercice qu'après l'acquisition d'une suffisante énergie par toutes les autres parties de l'économie. Les bains froids de rivière et surtout les bains de mer, les douches ou les lotions froides sur les lombes, le périnée et l'appareil génital, hâtent singulièrement le réveil de celui-ci; quelquefois, mais bien rarement, quand la réparation générale a été suffisante, il est nécessaire de recourir à des excitants locaux plus énergiques : les frictions sèches ou aromatiques, le massage, et, au besoin, la flagellation, peuvent rendre quelques services; mais rarement on a besoin de recourir aux cantharides, dont l'action sur la vessie est ici plus nuisible qu'utile.

Les agents ou moyens excitateurs ne doivent être mis en usage qu'avec la plus grande circonspection; ils ne seraient pas sans une influence fâcheuse sur un système qui a été le théâtre de désordres quelquefois très-graves.

Quant à la médication morale excitante, qu'il faut appeler à son aide quand le retour des désirs vénériens se fait trop longtemps attendre, je l'ai suffisamment exposée dans plusieurs parties de cet ouvrage, pour qu'il soit fastidieux d'y revenir ici.

B. *Impuissance par excès vénériens avec lésions anatomiques locales.* — Je n'ai point à décrire toutes les lésions anatomiques qu'impriment à l'appareil génital les excès vénériens; parmi ces lésions, les unes n'ont aucune influence sur l'énergie virile, et les autres affectent plutôt la fécondité que la puissance, et n'agissent que secondairement sur cette dernière.

Les premières, étrangères à mon sujet, ne doivent point trouver ici de place; les secondes, naturellement désignées pour une autre partie de cet ouvrage, entreront dans le cadre de la stérilité, car leur étude, enfermée dans les limites de l'impuissance, serait nécessairement incomplète et ferait en même temps un double emploi.

Cependant je m'arrêterai à une lésion qui, si elle affecte souvent la faculté reproductrice, ne laisse jamais intacte la force copulatrice : c'est la lésion des vésicules séminales et des canaux éjaculateurs qui donne naissance aux pertes séminales, ou spermatorrhée.

L'exception que je fais en faveur de cette maladie, en la décrivant ici, se justifie par ce que je viens de dire, à savoir : que si, arrivée à un certain degré, elle est une cause certaine d'impuissance, elle ne détruit pas toujours le principe de la fécondité, comme on peut s'en convaincre en examinant au microscope le sperme de certains tabescents qui ne présentent également rien d'anormal du côté des glandes spermatiques.

Mais alors s'élève une autre question qui appellera ailleurs toute mon attention, et que je ne veux indiquer présentement qu'afin de légitimer la place que j'accorde ici à la spermatorrhée. L'éjaculation spermatique, si difficile et le plus souvent impossible chez les individus atteints de pertes séminales, constituant, chez l'homme, une des conditions de la faculté fécondante, doit, par son absence, constituer une cause positive de stérilité. Sans doute, à première vue, et en ne jugeant que par la théorie, les choses paraissent devoir se passer ainsi ; mais lorsqu'on songe à la possibilité de la fécondation artificielle, à certains déplacements de l'utérus, etc., on reste convaincu que si l'éjaculation est une des conditions de l'acte normal de la procréation chez l'homme, elle n'en est point une condition tellement absolue que, dans quelques circonstances rares il est vrai, cet acte ne puisse s'accomplir sans elle.

Cette question, dont l'importance est si grande au point de vue de la famille et de la médecine légale, sera pour moi le sujet d'un examen sérieux, alors que j'étudierai l'étiologie de la stérilité chez l'homme ; pour le moment, je n'ai voulu qu'expliquer l'exception que je fais ici en faveur de la spermatorrhée, et montrer qu'elle entraîne plus constamment l'impuissance que la stérilité.

Pollutions. Spermatorrhée. — Les pertes séminales ne sont pas exclusivement produites par les excès vénériens ; des causes nombreuses président à leur naissance, et comme elles sont souvent réunies en plus ou moins grand nombre sur le même individu, il est quelquefois difficile d'assigner à chacune d'elles l'influence qui lui revient en propre. Cependant les excès de masturbation et de coït tiennent une des premières places dans la production de ces phénomènes morbides, et c'est à leur action seulement que je vais limiter l'espace que je puis consacrer ici aux pertes séminales involontaires.

Celles-ci admettent divers degrés que tous les auteurs se sont attachés à séparer avec soin ; cette distinction était, en effet, nécessaire, non-seulement au point de vue du pronostic, mais encore sous le rapport du traitement, ainsi que nous le verrons tout à l'heure.

En ne considérant que les conditions physiologiques qui, dans l'état normal, accompagnent la sortie du sperme, c'est-à-dire désirs vénériens, érection de la verge et sensation voluptueuse, nous devons nous demander, avant toute chose, si ces conditions sont ou non conservées. Dans le premier cas, la perte séminale ne rentre plus qu'indirectement dans notre cadre, ou tout au moins ne peut plus être considérée que comme une cause éloignée et plus ou moins certaine d'impuissance ; dans le second cas, au contraire, l'affection est complétement de notre domaine, puisqu'elle est suivie de l'abolition d'une ou de plusieurs circonstances nécessaires à l'acte copulateur.

Ces deux états se rencontrent en effet, et il existe entre eux un tel lien de parenté que, assez généralement, l'un est amené par l'autre.

J'appelle *pollution* la perte de semence qui s'accompagne de l'orgasme vénérien ; et je réserve le nom de *spermatorrhée* aux pertes séminales qui ne sont sollicitées par aucun désir vénérien, qui ne sont pas précédées de l'érection de la verge, et qui ne provoquent aucune sensation voluptueuse.

L'impuissance ne coexiste pas toujours avec la pollution ; elle est, au contraire, un attribut constant de la spermatorrhée.

Pollutions. — La pollution, que je vais d'abord examiner pour revenir tout à l'heure à la spermatorrhée, doit nécessairement, pour constituer un état pathologique, se produire en dehors de la volonté et des excitations naturelles du génésique.

Eu égard à cette double condition, les pollutions ont été distinguées en nocturnes et diurnes, comme s'il était possible de limiter exactement ce qui appartient aux excitants internes, et ce qui revient aux excitants physiques.

Je m'explique.

Pendant le sommeil et précédant la pollution nocturne, tantôt il se produit des rêves lascifs, des tableaux hideux mais toujours obscènes, et tantôt il ne se fait aucune excitation interne. — Du côté du corps, la chaleur du lit, la position horizontale, et surtout le coucher sur le dos, qui appelle une sorte de fluxion sur la moelle épinière, sont, sans compter la plénitude de la vessie, des causes externes d'excitation génitale. — Or, laquelle de ces causes amène la pollution? Est-ce le rêve lascif? Est-ce le rêve hideux, mais cependant toujours lubrique? Est-ce la chaleur du lit? Est-ce la position couchée? Est-ce enfin le contact ou le frottement de la chemise ou des draps sur la verge? — Comme on le voit, la distinction n'est pas facile à faire, et je la crois, sinon nuisible à la clarté du discours, du moins entièrement inutile, alors que l'on a séparé, comme je l'ai fait, la pollution de la spermatorrhée.

Sans doute, la pollution est bien plus fréquente pendant la nuit que pendant le jour, précisément à cause de la réunion des excitants internes et externes qui n'existe pas toujours à l'état de veille.

Tous les auteurs n'admettent pas la pollution diurne telle que je l'entends ici : les uns, empiétant sur le domaine de l'acte physiologique, regardent comme un état pathologique, et nomment *perte séminale convulsive*, une éjaculation trop rapide, l'émission du sperme avant l'introduction de la verge dans le vagin ; et les autres la nient et la contestent tout simplement.

Les premiers poussent évidemment trop loin l'amour de la pathologie : la rapidité de l'éjaculation, que l'on observe fréquemment, loin d'être toujours le résultat d'un état morbide, est souvent l'attribut de la jeunesse et de désirs ardents, ou la conséquence d'une passion violente et comprimée, ou celle d'attouchements prolongés, d'excitations amoureuses trop longues.

Cependant, et il m'a été donné d'en observer un grand nombre de cas, la rapidité de l'éjaculation peut tenir à une surexcitation de la sensibilité nerveuse, soit des vésicules séminales, soit des conduits éjaculateurs, soit même du col de la vessie, à ce point que la plus légère excitation détermine incontinent la sortie du sperme, — c'est la goutte d'eau qui fait déborder le vase, — mais dans ces circonstances, qui tiennent évidemment à un état morbide local, la rapidité de l'éjaculation ne saurait constituer une pollution, puisque j'ai établi que cette dernière n'existait qu'en l'absence de la volonté.

A ceux qui nient la réalité de la pollution diurne, il faut répondre par des faits. Le satyriasis est l'expression la plus haute de cet état, et malgré les restrictions que j'ai faites ailleurs (1) sur cette maladie, on me permettra de citer l'exemple suivant : « Un jeune homme de vingt ans, d'une complexion primitivement forte, presque athlétique, mais affaibli par les excès dont je vais donner l'histoire, s'était, depuis l'âge de quinze à dix-huit ans, livré à cet acte destructeur dont Tissot a si bien décrit les dangers. Il s'y livrait de préférence dans le bain, et avait quelquefois porté le nombre des pollutions jusqu'à quinze dans un seul jour. Des excès aussi multipliés affaiblirent sa constitution, portèrent atteinte à la force de son intelligence et du trouble dans sa mémoire. D'après les avis de quelques personnes prudentes, ce jeune homme renonça à cette funeste habitude, et, depuis deux ans, il vivait dans la continence la plus exemplaire. Sa constitution s'était raffermie ; la mémoire et les autres facultés mentales avaient repris leur ancienne vigueur. Ses parents, qui le destinaient au commerce, le placèrent chez un négociant : il se livrait à ses nouvelles occupations avec tout le zèle et l'activité que comportaient et son âge et sa constitution robuste. Chéri de ce négociant et de sa femme, dont il recevait tous les jours des témoignages d'amitié, il s'abusa sur le genre d'attachement que la femme avait pour lui, et s'imagina d'en être tendrement aimé ; de son côté, il la payait d'un tendre retour. Placé entre la crainte de violer les devoirs de la reconnaissance, et le désir de posséder cette femme qui n'était cependant ni jeune ni jolie, sa situation devint de jour en jour plus pénible et plus embarrassante. Quand par hasard elle jetait un coup d'œil sur lui, *il entrait en érection et ne tardait pas à éjaculer* ; la nuit, il avait des pollutions fréquentes, etc., etc. (2). » J'ai connu un jeune homme à peu près dans la position de celui dont on vient de lire l'histoire. Après des excès de masturbation, qui avaient cessé depuis assez longtemps, dix-huit mois environ, ce jeune homme devint éperdument amoureux d'une jeune fille. Toutes les fois qu'il se trouvait en sa présence ou que son image se présentait à son esprit, il entrait en érection, et alors le moindre contact sur la verge déterminait l'éjaculation. Il était obligé de rester immobile pour empêcher le frottement de son pantalon ou de sa chemise; il lui est même arrivé d'avoir sa perte séminale en touchant seulement la main de la personne aimée.

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(1) Voyez la page 192.

(2) *Dictionnaire des sciences médicales*, art. Satyriasis, t. L, p. 52.

Que cet état tienne à une surexcitation de tout le système nerveux ou simplement de celui des organes génitaux, il le faut admettre comme l'expression d'une situation anormale qui n'est certes pas l'impuissance, mais qui peut en être regardée comme une cause plus ou moins prochaine ou plus ou moins éloignée.

Cependant, il est à remarquer que les personnes atteintes de pollutions, soit nocturnes, soit diurnes, perdent une partie de leur empire sur le sens génital, c'est-à-dire que celui-ci se montre plus facilement réfractaire que dans l'état normal aux ordres de la volonté ; on dirait que l'organe générateur tend à perdre l'habitude de cette obéissance pour subir l'influence d'excitateurs anormaux. Ce commencement de révolte de l'appareil copulateur contre la volonté passe très-souvent inaperçu, ou est expliqué et justifié aux yeux du malade par les pollutions qui le fatiguent ; c'est une nuance dans le degré de l'énergie virile dont le médecin doit tenir compte, car cet état est toujours l'indice d'un mal plus grave ; s'il n'annonce pas constamment la spermatorrhée, il promet à coup sûr, si les passions se perpétuent, un affaiblissement génital plus ou moins prochain.

Il y a donc nécessité de combattre les pollutions, non pas tant pour le dommage dont elles chargent le présent, que pour les dangers dont elles menacent l'avenir.

D'après ce que j'ai dit jusqu'à présent des pollutions nocturnes et diurnes, on doit admettre qu'elles sont sous la dépendance, soit d'une surexcitation nerveuse générale ou locale, soit d'une irritation phlegmasique de l'appareil séminal.

La médication, on le comprend, sauf quelques préceptes généraux, tels qu'abstention de coït et d'onanisme, éloignement de tout motif d'excitation, soit morale, soit physique, etc., se conforme à la nature propre de l'affection.

Dans le premier cas, les opiacés, les sédatifs, les antispasmodiques, les bains chauds, généraux ou locaux, surtout le chloral, préconisé par H. Thompson et Bradbury, dans les contractions spasmodiques des vésicules, occupent une place importante. Si la pauvreté du sang ou le délabrement de la constitution entretiennent la susceptibilité nerveuse, on a recours, outre le régime approprié, aux ferrugineux, au quinquina, au lupulin, qui joint, selon M. Zambaco, à son action sédative sur les organes génitaux, une action tonifiante non moins remarquable (1).

Dans les cas d'irritation phlegmasique locale, on peut avec avantage recourir aux antiphlogistiques locaux, surtout quand le malade accuse de la pesanteur au périnée, une sorte de cuisson ou de gêne pendant ou après l'émission de l'urine, et un sentiment de chaleur dans la portion prostatique de l'urèthre, après l'éjaculation spermatique. Si la phlegmasie était à ce point légère qu'elle ne se manifestât par aucun des symptômes dont je viens de parler, on retirait un plus grand avantage du bain de siége froid, d'applications toniques externes que de la cautérisation de la prostate.

Mais, je le répète, la continence morale et physique, secondée par une hygiène et un régime convenables, est le moyen le plus puissant à opposer aux pollutions qui, dans beaucoup de cas, ne réclament pas les secours de la matière médicale.

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(1) *Bulletin de thérapeutique*, 1854, t. XLVII, p. 161.

Spermatorrhée. — Cette affection a eu le sort de beaucoup d'autres qui, après avoir été admises dès la plus haute antiquité, ont été révoquées en doute et même niées par ceux-là mêmes qui étaient le mieux placés pour les décrire. Hippocrate, avec cet esprit observateur qui a fait le désespoir de tous ceux qui l'ont suivi, mentionne les symptômes principaux de cette maladie. « Elle attaque, dit-il, principalement les nouveaux mariés et les gens adonnés aux plaisirs vénériens ; ils sont sans fièvre, ont bon appétit et maigrissent. Si vous les interrogez, ils répondent que des espèces de fourmis leur semblent descendre de la tête le long du rachis ; après la miction ou la défécation, ils rendent du sperme abondant et aqueux ; ils n'engendrent pas, ils ont des pollutions nocturnes, soit qu'ils couchent ou non avec une femme (1). » Celse n'est pas moins explicite qu'Hippocrate : *Est etiam*, dit-il à son tour, *circa naturalia vitium, quod sine venere, sine nocturnis imaginibus sic fertur, ut, interposito spatio, tabe hominem consumat.* (2).

Toute la symptomatologie de la spermatorrhée est contenue dans la phrase d'Hippocrate et dans celle de Celse, et l'on a droit de s'étonner qu'après des témoignages si explicites et des autorités si compétentes, il faille arriver jusqu'au XVII^e^ siècle pour retrouver quelque trace de cette affection dans les auteurs, même les plus estimés. Tauvry (3) fait la même observation qu'Hippocrate ; Morgagni (4), tout en reconnaissant, comme Celse, que chez les hommes affaiblis par la débauche le sperme peut s'écouler sans plaisir, sans excitation vénérienne, ainsi qu'il arrive par l'effet d'un lavement trop chaud, Morgagni, dis-je, remarque que le liquide de l'écoulement vient tantôt de la prostate et tantôt des vésicules séminales, et commence ainsi une confusion que n'ont même pas encore entièrement dissipée aujourd'hui les recherches de Wichmann, de son traducteur, Sainte-Marie et celles surtout de Lallemand.

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(1) Hippocrate, *Œuvres*, trad. par Littré. Paris 1851, t. VII ; *Des maladies*, t. II, p. 79.

(2) Celse, *De medicinâ*, lib. IV, sec. XXI, Editio nova, curantibus Fouquier et Ratier, Parisiis, 1823, p. 175.

(3) Tauvry, *Nouvelle anatomie raisonnée*, 1693, p. 164.

(4) Morgagni, *De causis et sedib. morb.*, epist. 44, art. 16.

Wichmann (1) s'attache d'abord à distinguer la pollution diurne et la pollution nocturne (2), et établit ensuite les caractères différentiels de la pollution diurne, et ceux de tous les autres écoulements que l'on confondait alors sous le nom générique de *gonorrhée*.

La pollution diurne, ou ce que l'on désigne aujourd'hui sous le nom de *spermatorrhée*, a lieu dans l'état de veille, sans excitation et sans désirs vénériens, sans érection, sans plaisir et en l'absence de toute action d'agents aphrodisiaques; de plus, ajoute Wichmann, dans la pollution diurne, les malades ne perdent pas sans cesse leur semence par une excrétion continuelle de cette liqueur, comme les femmes sujettes à la leucorrhée; mais ils l'éjaculent toute à la fois et en une seule fois, et c'est cette circonstance qui a fait donner à cette maladie le nom de *pollution*. Comme Hippocrate et Celse, Wichmann a soin de mentionner que la perte diurne du sperme se produit surtout à la fin de l'émission des urines et à la suite des efforts de la défécation.

Certes, à ces caractères, il est facile de distinguer la pollution diurne de l'écoulement spermatique qui se produit à la suite d'entretiens et d'attouchements libidineux, et aussi des écoulements de diverses natures qui se font goutte à goutte et d'une manière continue. Cependant Swediaur, qui connaissait pourtant le travail du médecin de Hanovre, retombe dans la confusion que ce travail avait principalement pour but de faire cesser. « La blennorrhée de la prostate, dit-il, est un écoulement morbifique du mucus de cette glande, ou de la liqueur des vésicules séminales, principalement pendant le jour, sans désir vénérien. Cette maladie est bientôt suivie d'une faiblesse ou débilité générale; cet épuisement est accompagné d'une émaciation universelle du corps, et mène par degrés à la mort, si le malade a différé, comme cela n'arrive que trop souvent, à consulter un médecin éclairé, ou que les moyens propres n'y ont pas été employés à temps.....

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(1) Wichmann, *De pollutione diurnâ frequenti, sed rarius observatâ, tabescentiæ causâ*. Gottingue, 1782, in-8.

(2) L'état morbide que nous avons désigné par le mot de *spermatorrhée* est exprimé dans Wichmann par celui de *pollution diurne*.

» La vraie ou véritable gonorrhée (*gonorrhæa proprie sic dicta*) est une émission de la semence ou de la liqueur spermatique contre nature, fréquente, affaiblissante, avec une sensation voluptueuse (*liquoris seminalis ejectio frequens libidinosa, involuntaria, debilitans*); on comprend généralement sous ce genre les pollutions nocturnes ou diurnes accompagnées d'une sensation libidineuse.

» Il y a une autre espèce de cette maladie : c'est un écoulement de la liqueur séminale contre nature, fréquent, diurne, affaiblissant, sans érection de la verge, ni désir vénérien. Le docteur J. E. Wichmann, à Hanovre, est le seul auteur qui ait bien traité ce sujet dans un petit ouvrage : *De pollutione diurnâ*, 1782 (1). »

En laissant de côté ce que Swediaur appelle la véritable gonorrhée, et qui correspond à ce que j'ai désigné sous le nom de *pollution*, on se demande en quoi diffèrent, au point de vue des symptômes, sa blennorrhée de la prostate et la pollution diurne de Wichmann.

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(1) *Traité complet des maladies syphilitiques*, 1798, t. I, p. 116 et 117.

Cullerier, qui nomme gonorrhée toute *sortie de l'humeur spermatique hors de l'économie*, admet deux espèces de gonorrhées pathologiques : l'une qui se produit pendant les efforts de la défécation chez les personnes ordinairement constipées, et qui disparaît avec la constipation ; et l'autre qui ressemble assez à la pollution diurne de Wichmann, si ce n'est que par les progrès de la maladie, l'écoulement auquel s'est jointe l'humeur prostatique *finit par devenir continuel; mais ce n'est plus qu'une lymphe sans consistance qui s'échappe du méat urinaire* (1).

Telles étaient, d'une manière générale, les données de la science sur ce sujet, quand Lallemand fit connaître le résultat de ses recherches (2), et jeta sur cette matière un jour nouveau et plus brillant.

L'illustre professeur de Montpellier énumère d'une manière plus précise qu'on ne l'avait fait avant lui les causes multiples qui donnent naissance à la sortie involontaire du sperme; parmi ces causes, il place en première ligne la blennorrhagie, et l'on s'étonne qu'il ait réservé pour le second rang les excès de masturbation, surtout quand on connaît l'explication qu'il donne de leur mode d'action.

Selon Lallemand, la masturbation fait naître, en raison de sa fréquence, dans les organes séminaux, un état de phlogose qui détermine la spermatorrhée. Cette opinion est acceptable, mais à la condition qu'elle ne soit pas prise d'une manière absolue, et que l'on accorde que, dans des cas moins rares qu'on ne le croit, la spermatorrhée n'est en aucune façon liée à un état phlegmasique des organes génitaux.

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(1) *Dictionnaire des sciences médicales*, art. GONORRHÉE, t. XIX, p. 4 et 5.

(2) Lallemand, *Des pertes séminales involontaires*. Paris, 1836-1842, 3 vol. in-8.

Sans doute, les excès vénériens occasionnent des uréthrites, des orchites, des inflammations du canal déférent, et l'on comprend très-bien que la fréquence et l'altération de la sécrétion séminale et l'émission involontaire de son produit soient le principal, sinon le seul symptôme de la phlegmasie chronique du testicule et de son appareil excréteur.

Mais en dehors de ces altérations, dont il est aujourd'hui impossible de contester la réalité, ne conçoit-on pas que les excès dont nous parlons aient pu porter leur action d'une manière plus exclusive sur le système nerveux génital, et l'aient frappé d'atonie par la fatigue et les pertes qu'ils lui ont imposées ?

L'observation journalière et rigoureuse des faits répond par l'affirmative.

Sous le rapport de la symptomatologie, toutes les spermatorrhées ne s'accompagnent pas, au début, de ce sentiment de souffrance, de cuisson, qui, avec le sperme sanguinolent, dénote l'existence d'un point phlegmasique.

La thérapeutique, à son tour, éclaire ce point de diagnostic, car les moyens les plus divers comptent également des succès, et le galvanisme dont Lallemand lui-même a eu à se louer dans un grand nombre de circonstances me semble militer en faveur de l'opinion que je défends.

La distinction que je m'attache à établir n'a pas un but purement spéculatif; elle a une portée pratique dont on sentira tout à l'heure l'importance, alors que je formulerai les bases du traitement.

Entre-temps, je me crois autorisé à admettre deux sortes de spermatorrhées :

1° La spermatorrhée avec phlegmasie aiguë ou chronique des vésicules séminales ;

2° La spermatorrhée avec simple atonie nerveuse de l'appareil génital.

Il n'est pas toujours facile, surtout à une époque éloignée du début de la maladie de distinguer l'une de l'autre, ces deux variétés de la spermatorrhée; cependant, en interrogeant le malade avec soin, en fixant ses souvenirs sur les circonstances qui ont précédé et qui ont accompagné les premiers symptômes de l'affection, il est possible d'arriver à un diagnostic à peu près certain.

Quand une phlegmasie est le point de départ de la spermatorrhée, le coït, alors qu'il est encore possible, s'accomplit avec rapidité, c'est-à-dire que l'éjaculation ne se fait pas attendre longtemps ; celle-ci s'accompagne d'un sentiment de chaleur, de cuisson même du côté de la prostate, et le sperme peut présenter quelques stries sanguinolentes.

Dans la spermatorrhée atonique, au contraire, l'appareil génital semble frappé d'une espèce de langueur qui n'est pas encore l'impuissance, mais qui exige, pour être secouée, l'intervention très-énergique de l'imagination. L'éjaculation, lente à se produire, n'occasionne aucune douleur et ne présente jamais un sperme sanguinolent.

Des pollutions, d'abord nocturnes et ensuite diurnes, précèdent presque toujours la spermatorrhée phlegmasique; assez généralemént ces pollutions font défaut dans la spermatorrhée atonique, qui se décèle progressivement par l'affaiblissement de plus en plus prononcé de l'énergie virile.

Souvent des lésions plus ou moins graves de la prostate, des canaux éjaculateurs, des vésicules séminales ou de tout autre organe de l'appareil spermatique, accompagnent la spermatorrhée phlegmasique; alors des matières morbides, telles que du pus, du sang décomposé, etc., se trouvent mêlées au sperme et ne laissent aucun doute sur la nature de l'affection.

Ce signe est d'autant plus important à noter, que dans la spermatorrhée atonique le produit de l'écoulement perd la consistance et l'opacité normales du sperme, qu'il se présente sous l'apparence d'une sérosité à peine filante, et que l'émission de la semence et celle de l'urine ne déterminent ni cuisson ni douleur.

Tels sont les traits particuliers qui séparent les deux variétés de spermatorrhée, lesquelles ont d'ailleurs des rapports de ressemblance qu'il ne m'appartient point d'exposer ici. J'ai dû m'arrêter un instant aux principaux caractères qui les distinguent, parce qu'ils déterminent la nature du traitement à opposer à l'impuissance.

Sans la séparation que je viens d'établir, et sur laquelle j'appelle sérieusement l'attention des praticiens, il est impossible de s'expliquer les succès que l'on retire des médications les plus opposées, et qui conduisent, ainsi que j'en ai acquis la conviction par moi-même, à repousser tout traitement exclusif.

J'ai assez souvent porté le caustique dans le canal de l'urèthre pour me croire le droit d'avoir une opinion propre, et je ne crains pas d'avancer que, si le nitrate d'argent guérit quelquefois, il est dans beaucoup de circonstances non-seulement inutile, mais encore nuisible ; je l'ai vu, dans diverses occasions, augmenter les pertes et déterminer des accidents qui, pour n'avoir rien de grave, ne laissaient pas que de compliquer d'une manière fâcheuse la position déjà si triste du malade.

Dans les cas où la cautérisation échouait, je réussissais tantôt avec les ferrugineux, tantôt avec la noix vomique, tantôt avec l'ergot de seigle, tantôt avec les stupéfiants et les antispasmodiques, etc., etc.

Bien évidemment, et il n'en saurait être différemment pour tout esprit non prévenu, cette diversité dans les résultats obtenus implique la variété dans la nature de l'affection, dont la connaissance exacte, je le répète, épargne des tâtonnements au médecin et des souffrances au malade.

Si la phlegmasie est aiguë, c'est-à-dire si l'éjaculation est douloureuse et le sperme sanguinolent, on ne doit pas hésiter à recourir aux antiphlogistiques locaux, à moins que la faiblesse du sujet n'en contredise formellement l'emploi ; les bains de siége chauds à l'eau de son ou de mauve, le repos, la position horizontale, le régime lacté et l'éloignement de toutes excitations amoureuses, complétent le traitement dont l'indication est assez rare dans la pratique.

Mais ce qui l'est beaucoup moins, c'est la phlegmasie chronique de l'appareil excréteur du sperme qui, sauf quelques circonstances exceptionnelles, n'exige ni les émissions sanguines ni les débilitants. C'est ici, surtout lorsque la phlogose s'accompagne de quelque ulcération ou de quelque désordre anatomique du verumontanum, que la cautérisation fait merveille. Sous ce rapport, Lallemand a rendu un immense service à la science et à l'humanité, car, il le faut bien reconnaître, avant lui, c'est-à-dire avant l'introduction de sa méthode dans la thérapeutique, cette sorte de spermatorrhée était souvent incurable, et les malheureux qu'elle atteignait s'acheminaient lentement vers la tombe, à travers des souffrances et une faiblesse toujours croissantes.

Cependant la médecine n'était pas entièrement désarmée, et si elle triomphait moins fréquemment qu'aujourd'hui, elle ne succombait pas toujours. Les révulsifs sur l'intestin ou sur le périnée, les lavements froids, les suppositoires appropriés, les bains, les douches générales et périnéales étaient des ressources dont le médecin tire encore parti, concurremment avec le caustique.

Mais, je le répète, dans la spermatorrhée phlegmasique, le moyen par excellence est la cautérisation avec le nitrate d'argent, et c'est à elle que l'on doit constamment recourir, lorsque les appréhensions du malade ne forcent pas à y renoncer.

Ce moyen est, au contraire, proscrit sévèrement dans la spermatorrhée atonique, et remplacé par les toniques, les astringents et les excitateurs, tant extérieurement qu'intérieurement.

Dans cette seconde variété de spermatorrhée, j'ai retiré les plus grands avantages de l'ergot de seigle, soit seul, soit même associé à la noix vomique. La formule dont je me sers d'ordinaire est la suivante :

Poudre d'ergot de seigle......	1 gramme.
Conserve de roses............	q. s.

On fait 10 pilules dont on commence à donner une matin et soir, et dont on augmente le nombre jusqu'à ce qu'on soit arrivé à 5 par jour.

Assez généralement je seconde l'action de ces pilules par une infusion de sommités d'absinthe, que je fais prendre, en guise de tisane, à la dose de deux ou trois verres par jour.

La noix vomique, quand elle doit être associée à l'ergot de seigle, est dosée de manière à pouvoir administrer le même nombre de pilules.

D'après les observations faites par Debout (1) et Zambaco (2) sur l'action tonifiante du lupulin (principe actif du houblon), on peut espérer retirer quelque avantage de l'emploi de ce médicament, malgré son action sédative sur les organes génitaux.

Enfin, M. le docteur Duclos, de Tours, a préconisé contre la spermatorrhée avec impuissance l'*extrait alcoolique de la noix vomique*, de la manière suivante (1) :

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(1) *Bulletin de thérapeutique*, 1852, t. XLIV, p. 239 et 385.

(2) *Ibid.*, 1854, t. XLVII, p. 161.

Extrait alcoolique de noix vomique...	5 grammes.

Diviser en 100 pilules à administrer comme il suit :

Pendant cinq jours, 1 pilule tous les soirs.

Les cinq jours suivants, 1 le matin, 2 le soir.

Pendant cinq autres jours, 2 le matin, 2 le soir.

Pendant cinq autres jours encore, 2 le matin, 3 le soir; et ainsi de suite, jusqu'à ce que le malade en prenne 8 par jour : 4 à la fois le matin et 4 le soir.

Quelques malades ont pris, sans accident, jusqu'à 14 pilules par jour.

A l'extérieur, M. Duclos seconde sa médication interne en faisant faire, sur les lombes et la partie interne et supérieure des cuisses, des frictions avec le liniment suivant :

Teinture de noix vomique.......	aa 60 grammes.
— d'arnica ou de mélisse..	
— de cantharides..........	15 —

Enfin, M. Wutzer (2) recommande, dans le même cas, les pilules suivantes, qui m'ont moins bien réussi que l'ergot de seigle ou la noix vomique :

Acide phosphorique solide........	4 grammes.
Camphre broyé..................	1,20 centigr.
Poudre d'écorce de quinquina.....	4 grammes.
Extrait de cascarille.............	q. s.

Faites des pilules de 10 centigr., et roulez-les dans la poudre de cannelle. On en prend 5 trois fois par jour.

Le traitement de la spermatorrhée, quel que soit celui auquel on donne la préférence, est également celui de l'impuissance. Celle-ci n'étant, pour ainsi dire, qu'une conséquence dans un cas et qu'un symptôme dans l'autre, s'efface et disparaît avec les pertes séminales. Seulement, quand la spermatorrhée a cessé, il faut qu'un régime fortifiant et analeptique relève les forces générales abattues, et que la plus grande réserve préside aux premiers rapprochements sexuels.

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(1) *Bulletin de thérapeutique*, t. XXXVI, 15 juin 1849

(2) *Ibid.*, t. XXXVII, p. 220, 15 septembre 1849.

CHAPITRE V

IMPUISSANCE SYMPATHIQUE

L'appareil génital joue un rôle trop important dans la vie de l'homme pour que des liens intimes n'aient pas été établis entre lui et les autres appareils de l'économie : une fonction qui, pour ses manifestations, a besoin de l'entier développement de l'organisme, et dont la cessation est le signal de la décadence générale, ne peut être isolée, et doit nécessairement être unie à toutes les autres fonctions dont elle est, en quelque sorte et tout à la fois, le couronnement et le but.

Dans l'introduction de cet ouvrage, j'ai indiqué, quoique en des limites nécessairement restreintes, les influences réciproques de la fonction génitale et des autres fonctions de l'économie; je ne reviendrai pas ici sur ces relations, appelées *synergies*, *sympathies physiologiques*, parce qu'elles appartiennent exclusivement au domaine de la biologie.

Mais en dehors de ces rapports normaux, de ces liens physiologiques dont la nature nous cache soigneusement le mécanisme, la maladie en établit d'exceptionnels qui, dans quelques cas, ne sont que l'aggravation de ceux qui existent à l'état de santé, et qui, dans d'autres circonstances, constituent bien réellement des états morbides distincts, inédits, si je puis me servir de ce mot.

C'est de ce genre de sympathies, nées sous l'empire d'un état morbide, qu'il sera question dans ce chapitre.

Par cela même que la fonction génitale, chez l'homme, participe aux deux éléments qui constituent la vie humaine, l'élément physique et l'élément moral, je partagerai les sympathies morbides de l'appareil copulateur en deux grandes classes :

1° Les sympathies morbides physiques;

2° Les sympathies morbides morales.

C'est dans cet ordre, qui me paraît tout à la fois le plus simple et le plus complet, que j'exposerai les matières de ce chapitre, qui n'est pas le moins intéressant de ce livre.

§ I. — **Sympathies morbides physiques.**

Dans l'état physiologique, l'appareil génital entretient des relations avec tous les organes de l'économie; mais j'ai montré déjà, dans le cours de cet ouvrage, que ces rapports étaient surtout plus intimes avec l'organe cérébral, avec celui de la phonation et avec celui de la digestion.

Sans doute des sympathies morbides de genres différents existent entre le sens génital et les autres parties de l'organisme; mais, au point de vue de ce livre, c'est-à-dire au point de vue de l'impuissance, je ne connais guère que les trois organes cités tout à l'heure dont certaines affections retentissent d'une manière fâcheuse sur la force virile; aussi est-ce dans les limites de ces affections que je renfermerai mon cadre, estimant les autres sympathies morbides organiques comme de simples rêves de l'imagination.

A. — *Appareil digestif.*

Si l'on réfléchit que les lésions de l'appareil digestif altèrent toujours plus ou moins les fonctions de la vie plastique, on est conduit à se demander si l'impuissance, qui coexiste avec ces lésions, ne doit pas être plus rationnellement attribuée aux troubles apportés par la lésion vitale, qu'aux désordres mêmes de l'appareil digestif. Sans doute, en restant dans la sphère de la théorie, on peut, avec quelque apparence de raison, adopter et défendre cette manière de voir; mais quand on descend dans le domaine des faits, quand on prend pour guides l'expérience et l'observation, on est forcé de reconnaître que si, par exemple, le cancer de l'estomac et la surexcitation de cet organe produite par l'acte de la digestion exercent l'un et l'autre une influence débilitante sur l'énergie virile, il faut reconnaître, dis-je, que la source de ces influences respectives est non-seulement différente, mais encore opposée, puisque dans le premier cas la vie plastique est profondément atteinte, tandis qu'elle est accrue et portée à son plus haut degré, dans le second cas, par l'acte même de la digestion.

Si c'était aux altérations de la force plastique qu'il fallût rapporter l'impuissance que je me propose d'examiner ici, je n'irais pas plus loin et je renverrais le lecteur à la partie de ce livre consacrée aux troubles de la fonction digestive; mais des observations recueillies par moi-même ne me permettent pas cette facile explication, et m'autorisent à penser que certaines lésions de l'appareil digestif agissent sur le sens génital autrement que par les troubles généraux de la nutrition.

De plusieurs faits que je retrouve dans mes notes, je m'étendrai principalement sur le suivant, à cause de sa physionomie étrange et de certaines circonstances curieuses qu'il m'a présentées.

M. X..., garçon au café de la Rotonde, vint me consulter pour un affaiblissement des organes génitaux qui, me dit-il, lui était survenu depuis un mois sans cause connue; les désirs vénériens n'étaient point éteints; l'érection, et, par suite, l'éjaculation, étaient seules impossibles.

Le malade était âgé de vingt-trois ans, d'un tempérament lymphatique, mais bien conformé et ayant toujours joui d'une santé générale bonne. Il ne s'était point livré à la masturbation; il avait eu des chancres et une blennorrhagie traités tous deux à l'hôpital du Midi, dans le service de Vidal (de Cassis), et avait été antérieurement opéré d'un varicocèle par Roux; cette opération n'avait laissé aucune trace, et, sans les aveux du malade, il eût été difficile de soupçonner une ancienne dilatation variqueuse des veines du cordon spermatique.

Les organes génitaux, parfaitement conformés, ne présentaient rien d'anormal, et leur examen le plus attentif ne put me rendre raison du mal que j'avais à combattre.

J'étais fort embarrassé du diagnostic à porter, et je pesais dans mon esprit les motifs d'une conduite à suivre, quand, machinalement, et bien plus, je l'avoue, pour occuper les loisirs du malade que pour éclairer ma religion, je demandai à voir la langue de mon visiteur, sur laquelle je portai instinctivement les yeux. A cette vue, un horizon nouveau s'ouvrit devant moi, car la langue, rouge et piquetée, ne pouvait me laisser des doutes sur l'existence d'une gastrite.

Dès ce moment, mon diagnostic fut éclairé d'une vive lumière, et, lorsque je sus que les premiers symptômes de l'impuissance coïncidaient avec l'apparition d'une douleur épigastrique, de certains troubles dans les digestions, etc., j'eus la certitude (certitude médicale, bien entendu) que l'affaiblissement de l'organe copulateur était sous la dépendance sympathique de l'affection de l'estomac.

Le traitement fut conforme à cette manière de voir, et le malade, qui espérait s'en retourner avec quelque formule aphrodisiaque (dans le sens ordinaire de ce mot), se montra fort mécontent de la tisane de mauve et du régime émollient que je lui prescrivis.

Cependant il ne dédaigna pas entièrement les conseils que je lui donnais, et comme la santé générale s'améliorait sous l'empire de cette médication, il crut devoir la continuer, sinon pour remédier à son impuissance, du moins pour se débarrasser des malaises et des troubles digestifs qui le tourmentaient.

Néanmoins, à mesure que la langue devenait moins rouge, l'épigastre moins douloureux, et les digestions plus faciles, les forces copulatrices reparaissaient, à ce point que l'érection d'abord, et le coït ensuite, furent possibles.

Mais, et c'est ici que se montre un caractère bizarre, la copulation n'était réalisable, ni pendant les digestions, c'est-à-dire pendant les deux ou trois heures qui suivaient les repas, ni dans la position horizontale qui déterminait une pression sur l'épigastre. L'érection de la verge se produisait comme dans les conditions normales, mais si l'une des deux circonstances que je viens de signaler, digestion ou pression épigastrique, existait, l'érection ne se soutenait pas et tombait dans le vagin même, après quelques courtes tentatives et avant l'éjaculation du sperme. Le matin, à jeun, était le moment de la journée le plus favorable à l'accomplissement de l'acte, pourvu toutefois que le malade évitât avec soin toute pression sur l'épigastre par une posture dont je dois m'abstenir de parler ici.

Cet état se prolongea assez longtemps, parce qu'il était impossible au malade, eu égard à sa position sociale, garçon de café, de suivre exactement la médication et surtout le régime alimentaire que réclamait sa gastrite. Comme il était venu réclamer mes soins parce qu'il avait l'intention de s'établir marchand de vin et de prendre femme, je lui conseillai vivement de se marier, en lui faisant sentir combien serait plus rapide, sous l'empire des soins domestiques, la guérison de sa maladie d'estomac, et combien serait aussi plus facile le coït, alors qu'il serait exercé au milieu de toutes les commodités de la couche conjugale.

Pendant assez longtemps le malade, reculant devant la honte d'un échec marital, n'osa suivre mes conseils, et commença par acheter un fonds de marchand de vin, qui, de serviteur le transformant en maître, lui permit de soigner et de guérir sa gastrite.

Après quelques mois de sa nouvelle position, il vint m'annoncer son mariage, en réclamant de nouveau et plus consciencieusement encore que précédemment, l'assurance qu'il était propre à remplir ses devoirs conjugaux. Un examen attentif et minutieux ne modifia en rien ma manière de voir, et cet homme, aujourd'hui marié, se loue tout à la fois du traitement que je lui ai fait suivre, et des conseils que je lui ai donnés.

Un de mes amis, dont l'irritabilité intestinale est extrême, est incapable d'entrer en érection et d'exercer le coït toutes les fois que cette irritabilité est mise en jeu; cette impuissance se prolonge deux ou trois jours, et même plus longtemps, selon que les coliques et la diarrhrée par lesquelles se manifeste l'affection ont été plus ou moins longues et violentes.

Je pourrais multiplier les exemples de cette nature ; mais ceux que je viens de rapporter et la connaissance que nous avons de l'empire exercé, à l'état physiologique, par la digestion sur l'énergie virile, suffisent, ce me semble, pour légitimer les sympathies morbides de l'appareil génital et de l'appareil digestif, sans recourir à des troubles de nutrition qui réagissent sur l'énergie virile, comme sur toutes les autres forces de l'économie animale.

Il est rare que dans l'impuissance sympathique que j'examine les désirs vénériens soient éteints ; dans quelques circonstances, au contraire, dans celles où l'activité digestive est augmentée, les désirs présentent une intensité plus grande, à laquelle ne répond pas l'organe copulateur. C'est une disposition analogue à celle que l'on ressent après un bon repas, alors que l'imagination, surexcitée par le vin et le café, s'égare en des rêves étranges, dont elle demande en vain la réalisation à un organe rebelle et sourd à ses provocations.

La durée de cette impuissance est évidemment subordonnée à celle de la maladie qui la tient sous son empire ; elle gravite dans les limites, non-seulement de son pronostic, mais encore de son traitement.

La disparition de l'état morbide de l'appareil digestif, en rompant les liens occultes qui lui enchaînaient le sens génital, rend ce dernier à la vie qui lui est propre, sans qu'il soit nécessaire d'intervenir pour faciliter ce retour.

B. — *Appareil vocal.*

Les relations qui, dans l'état physiologique, unissent l'appareil vocal et l'appareil génital, sont connues de tout le monde : les changements qui, à l'époque de la puberté, s'opèrent simultanément dans chacun de ces appareils, le timbre enfantin que conserve la voix chez les individus mutilés et chez ceux dont les organes génitaux sont atrophiés, ne laissent aucun doute sur les rapports intimes, quoique inexplicables, des fonctions de la phonation et de celles de la génération.

Mais en est-il de même entre l'impuissance virile et certaines affections de l'appareil vocal? En d'autres termes, existe-t-il entre les appareils que j'examine des sympathies morbides, comme il existe entre eux des sympathies physiologiques?

Je ne puis ici apporter mon propre témoignage; je n'ai jamais observé une impuissance sympathique d'une affection du larynx ; mais Burdach rapporte, d'après Meckel : (1) « Qu'aux altérations du larynx se joignent parfois l'endolorissement et l'atrophie des testicules, accidents qui augmentent à mesure que la maladie primitive fait des progrès (2). »

L'asthme est, à son tour, noté par quelques auteurs comme une cause sympathique d'impuissance; mais il m'est difficile d'admettre une semblable corrélation; au contraire je me demande, en l'absence de tout détail clinique, et en me rappelant que la masturbation est souvent le point de départ de cette maladie, si l'impuissance qui coexiste avec l'asthme n'est pas plutôt le résultat de l'onanisme que l'effet sympathique de l'affection des organes de la respiration? Des faits précis peuvent seuls éclaircir le doute que j'émets ici, car, en cette occurrence, l'observation clinique est la seule sur laquelle il soit possible de se guider.

Mais, je le répète, rien de semblable n'est à ma connaissance, et de tous les confrères que j'ai interrogés, je n'en ai pas trouvé de plus heureux que moi.

C. — *Appareil cérébral.*

Il n'en est pas de même de l'encéphale, et surtout de sa partie postérieure et inférieure, dont les relations avec l'appareil génital sont si manifestes, que les phrénologistes placent dans le cervelet le siége de la faculté procréatrice.

Il est bien évident que je n'entends point parler ici des affections cérébrales qui, agissant sur la masse encéphalique, attaquent dans sa source l'innervation générale, dans laquelle est nécessairement comprise l'innervation sexuelle. J'ai ailleurs abordé ces causes d'impuissance, je n'y reviendrai pas ici.

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(1) Meckel, *Abhandlungen aus der menschlichen und vergleichenden Anatomie*, p. 194.

(2) *Traité de physiologie*, trad par Jourdan. Paris, t. V, p. 15.

Mais il est des accidents, ou, si l'on aime mieux, des lésions du cerveau qui, tout en respectant les fonctions du système nerveux, retentissent sur le sens génital, sans qu'il soit possible d'expliquer cette action autrement que par les sympathies qui unissent l'organe cérébral et l'organe sexuel.

Planque cite quelques faits de ce genre qu'il n'est pas inutile de rappeler ici : « Paul de Sorbait, dit-il, rapporte dans le *Journal d'Allemagne* (déc. 1, an II, obs. 104, p. 177), qu'un seigneur, ayant été blessé à l'occiput, était resté impuissant après sa guérison, n'ayant ni érection, ni éjaculation. Il n'est donc pas vrai, répond-il, que la tête ne contribue en rien au coït et à la semence. Ainsi, ce n'était point sans raison que Platon assurait qu'elle venait du cerveau et de la moelle allongée : aussi avouons-nous que la semence est un excrément du dernier aliment qui vient de toutes les parties, mais surtout de la tête. Au reste, nous avons plusieurs exemples d'une pareille cause d'impuissance. Nicolaus dit avoir connu un juif qui devint impuissant par une plaie de tête. Hildanus (cent. 6, obs. 59) assure avoir vu la même chose chez un homme qui, huit ans auparavant, avait reçu un coup de bâton sur le bregma droit; il n'entendait point de ce côté-là. Hildanus croit qu'après ce coup de tête, il s'était écoulé contre nature une matière qui a obstrué les nerfs et même les artères qui servent à l'érection de la verge. Un autre homme a éprouvé le même sort, après une chute sur le dos; il sentait du plaisir, mais il ne pouvait point parvenir à l'érection. Il y a des auteurs qui prétendent que la semence vient du cerveau. De ce nombre est Donatus (*Med. mirab.* lib. IV, c. 18) ; mais Raies (*Camp. elys.*, quæst. med. 58, § 20) combat ce sentiment, et demandant, au sujet de cette question, si la saignée qu'on fait derrière les oreilles aux Scythes les rend stériles, il conclut (§§ 27 et 28) que cette saignée qu'on fait fréquemment, et dans laquelle on tire beaucoup de sang, affaiblit, et que le froid qu'elle produit à la tête est cause de la stérilité, sans nier cependant une sympathie occulte entre les oreilles et les parties de la génération. C'est pour cela qu'un jurisconsulte, au rapport de Dulaurens (*Anat.*, lib. VIII, quæst. 4), a écrit qu'il fallait couper les oreilles à ceux qui volaient, pour les empêcher d'engendrer de petits voleurs. Un soldat robuste, et père de trois enfants, eut les oreilles coupées pour différents crimes, et fut chassé hors de la ville (*Ibid.*, déc. 2. an VII, append., obs. 10, p. 161); depuis ce temps-là, il ne sentit plus aucun désir charnel et ne put avoir aucune érection (1). »

Malgré les bizarres explications que nos pères acceptaient sur la foi d'Hippocrate, et qu'une observation plus saine et les progrès de la science ne permettent plus d'admettre aujourd'hui, il est constant que des plaies de tête, des coups sur le cervelet, déterminent une impuissance qui persiste, malgré l'absence de toute lésion appréciable et plusieurs années après la guérison des accidents encéphaliques. Bien évidemment, une corrélation inexplicable, un lien occulte, en un mot, une sympathie existe entre l'organe renfermé dans le crâne et celui qui sert à la propagation de l'espèce.

Cette sympathie va recevoir une nouvelle et éclatante démonstration par ce que j'ai à dire de l'influence exercée sur le sens génital par les affections du moral, dont les facultés constituent, comme on le sait, la fonction la plus haute et la plus noble de l'organe encéphalique.

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(3) Planque, *Bibliothèque de médecine*, art. IMPUISSANCE, t VI, p. 240 et 241.

§ II. — Sympathies morales.

Me voici arrivé aux sources les plus fécondes d'impuissance, et, par conséquent, en face de difficultés également ardues pour l'écrivain et pour le praticien. C'est que l'élément moral de notre nature, qui exerce sur les organes génitaux un empire à peu près absolu, subit des influences si diverses et si mystérieuses, qu'il est presque impossible de pénétrer tous les motifs de ses déterminations et tous les mobiles de ses passions.

Soumis aux exigences si nombreuses de l'organisme, l'élément moral en reflète les nuances multiples, qu'elles découlent, soit du tempérament, soit de la constitution, soit de l'âge, soit du sexe, soit de l'état de santé ou de maladie, soit des impressions du monde extérieur, etc. Livré, sous le contrôle seul de la conscience, à toutes les inspirations du libre arbitre, il se modifie et change à tout instant par l'éducation, par l'instruction, par l'expérience de la vie, par le spectacle des vices et des vertus dont la lutte est l'essence même des sociétés humaines; de telle sorte que, méandre insaisissable, l'élément moral échappe, pour ainsi dire, à toute analyse, et se joue des efforts tentés pour le saisir.

Cependant, sans vouloir faire de la psychologie, mais seulement pour nous guider dans notre marche, quelle que soit notre croyance en la source à laquelle s'alimentent les idées et les passions, il faut reconnaître que l'âme, dans l'acception la plus large du mot, manifeste deux sortes de phénomènes, unis sans doute par un lien commun, mais parfaitement distingués par une physionomie propre et par des caractères spéciaux; ces phénomènes sont ceux que l'on désigne, les uns sous le nom de phénomènes *intellectuels*, et les autres sous le nom de phénomènes *affectifs;* cette distinction conduit à partager les facultés de l'âme en deux grandes classes :

facultés intellectuelles et *facultés affectives; facultés de l'entendement* et *facultés de la sensibilité morale.*

C'est sous chacune de ces deux faces que je vais examiner l'influence morbide exercée sympathiquement par l'élément moral sur le sens génésique.

A. — *Facultés intellectuelles*

Dans la thèse inaugurale que je soutins, en 1844, devant la Faculté de médecine de Paris, je trouve les lignes suivantes qui, à de longues années de distance, sont encore l'expression de ma pensée : « Quelles sont les propriétés de l'âme, ou, pour nous conformer à la langue des philosophes, quelles sont les facultés de l'âme relatives à l'entendement? Le cadre de ce travail ne nous permet pas d'entrer dans le domaine de la psychologie... Cependant deux mots nous semblent nécessaires, car les psychologistes nous paraissent avoir confondu les facultés primitives de l'entendement avec les résultats de ces mêmes facultés, alors que l'encéphale a déjà ressenti l'action de la force morale; ainsi le jugement, le raisonnement, la mémoire, etc., supposent une opération préalable; ils ne sont donc que des résultats *secondaires* et non des facultés *primitives*, comme on a voulu le dire. Pour nous, nous renfermant dans l'étude des phénomènes généraux, nous avons cherché quels étaient les hommes qui manifestaient au plus haut degré les actes intellectuels, et nous n'avons trouvé que des artistes ou des savants. Nous avons été ainsi conduit à n'admettre que deux facultés primitives de l'entendement : l'imagination et la raison. Tout ce que les psychologistes ont décoré du nom de *facultés primitives* de l'entendement ne constitue que les attributs de l'imagination et de la raison ; ce sera, si l'on veut, des facultés secondaires, mais jamais des facultés primitives : art et science, voilà tout l'entendement; imagination et raison, voilà les deux piliers de l'édifice (1). »

L'imagination est cette faculté éminemment créatrice, qui fait revivre les souvenirs du passé, donne un corps aux désirs du présent et anime les espérances de l'avenir; elle est en toutes choses distincte de la raison qui, elle, nous fournit les moyens de connaître et d'apprécier la réalité; tandis que l'une nous ouvre sans cesse des horizons immenses et nous découvre des mondes remplis de fantômes gracieux ou terribles, l'autre, au contraire, nous enserre dans les liens d'une réalité brutale, et nous montre la vie sans prisme trompeur, comme sans voiles séduisants.

Ces deux facultés, dont l'empire s'exerce sur des domaines si différents, ne sauraient être atteintes de la même manière, c'est-à-dire que les troubles de l'imagination et de la raison ne sauraient découler de la même source : les premiers, participant de l'essence même de la faculté qu'ils agitent, s'inspirent d'un rêve, d'une croyance purement gratuite, en un mot, d'une idéalité; les seconds, au contraire, ont pour incitateur la réalité qui leur sert à la fois de fondement et d'excuse.

Je m'explique.

Deux hommes, au moment d'accomplir le coït, se trouvent tout à coup frappés d'impuissance : l'un se croit sous l'influence d'un sortilége, l'autre s'est aperçu que la femme avait ses règles. Chez le premier, le trouble naît d'un mensonge; chez le second, le trouble a la réalité pour point de départ; chez celui-ci, l'imagination s'en est laissé imposer par un fantôme; chez celui-là, la raison a plié sous le poids de la vérité.

La distinction, que je m'étudie à établir ici, est importante au point de vue de ce livre; plus je réfléchis au parti que l'on en peut tirer pour le diagnostic, le pronostic et surtout le traitement de l'impuissance, plus je m'étonne de ne pas la voir, je ne dirai pas indiquée, mais même soupçonnée chez ceux-là mêmes qui ont fait une étude toute spéciale de l'influence du moral sur le physique.

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(1) Roubaud, *Des passions*, p. 27.

Je vais donc, contrairement à mes devanciers, examiner séparément l'empire exercé sur le sens génital, et par les troubles de l'imagination et par ceux de la raison.

I. — *Troubles de l'imagination.* — S'il m'était permis de me servir ici du langage philosophique, je dirais que ces troubles sont ou *objectifs* ou *subjectifs.*

Ils sont objectifs, quand ils ont leur source en dehors de celui-là même qu'ils affectent; ils sont subjectifs, quand ils découlent de celui-là même qui les éprouve.

Les premiers sont incontestablement les plus nombreux, car ils embrassent le temps, l'espace, les lieux, tous les objets de la création : tel homme croit à l'influence fâcheuse d'une lune, d'un saint du calendrier, d'un jour dans le mois, ou d'un mois dans l'année; tel autre s'imagine que la lumière, que le plein air paralysent ses organes; celui-ci ajoute foi aux diseurs de bonne aventure, aux esprits malins qui jettent des sorts et qui *nouent l'aiguillette;* celui-là, interprétant à sa façon un sourire, un regard, une parole de la femme aimée, ou même par l'effet seul de son imagination, se dit victime de l'indifférence, du dédain et même du mépris de l'objet de son amour, etc., etc.

Certes, les exemples de ces sortes d'impuissance fourmillent partout : tantôt fugitive, tantôt plus tenace, elle est indistinctement l'apanage des intelligences d'élite ou des esprits bornés et crédules; le catalogue des faits de ce genre rapportés par les auteurs serait pour moi une mine féconde, si je me proposais d'amuser bien plus que d'instruire. Cependant, je dois faire une exception en faveur de Montaigne, dont on me reprocherait sans doute d'avoir tu le nom dans un sujet qu'il a si savamment et si galamment traité, d'autant mieux que cette exception se justifie elle-même par le haut enseignement qui en découle : « Un comte de très-bon lieu, dit-il, de qui j'estoy fort privé, se mariant avec une belle dame qui avoit esté poursuivie de tel qui assistoit à la feste, mettoit en grande peine ses amis : et nommément une vieille dame sa parente, qui présidoit à ces nopces, et les faisoit chez elle, craintive de ces sorcelleries : ce qu'elle me feit entendre. Je la priay de s'en reposer sur moy. J'avoy de fortune en mes coffres, certaine petite pièce d'or platte, où estoyent gravées quelques figures célestes, contre le coup du soleil, et pour oster la douleur de teste, la logeant à poinct sur la cousture du test : et pour l'y tenir, elle estoit cousuë à un ruban propre à rattacher soubs le menton. Resverie germaine à celle de quoy nous parlons. Jacques Peletier, vivant chez moy, m'avoit faict ce présent singulier : j'advisay d'en tirer quelque usage, et dy au comte qu'il pourroit courre fortune comme les aultres, y ayant là des hommes pour luy en vouloir prester une; mais que hardiment il s'allast coucher : que je luy feroy un tour d'amy, et n'espargneroy à son besoin un miracle qui estoit en ma puissance : pourveu que sur son honneur, il me promist de le tenir très-fidellement secret. Seulement, comme sur la nuict on iroit luy porter le resveillon, s'il luy estoit mal allé, il me feit un tel signe. Il avoit eu l'âme et les oreilles si battuës, qu'il se trouva lié du trouble de son imagination : et me feit son signe à l'heure susdicte. Je luy dis lors à l'oreille, qu'il se leivast, soubs couleur de nous chasser, et prins en se joüant la robbe de nuict que j'avoy sur moy (nous estions de taille fort voisine) et s'en vestit, tant qu'il auroit exécuté mon ordonnance, qui feut, quand nous serions sortis, qu'il se retirast à tomber de l'eau : dict trois fois telles paroles, et feit tels mouvements. Qu'à chacune de ces trois fois, il ceignist le ruban que je luy mettoy en main, et couchast bien soigneusement la médaille qui y estoit attachée, sur ses roignons : la figure en telle posture. Cela faict ayant à la dernière fois bien estreint ce ruban, pour qu'il ne se peut n'y desnoüer, ny mouvoir de sa place, qu'en toute asseurance il s'en retournast à son prix faict : et n'oubliast de rejetter ma robbe sur son lict, en manière qu'elle les abriast tous deux. Ces singeries sont le principal de l'effect, nostre pensée ne se pouvant demesler, que moyens si estranges ne viennent de quelque abstruse science, leur inanité leur donne poids et reverence. Somme il feut certain, que mes charactères se trouvèrent plus vénériens que solaires, plus en action qu'en prohibition (1). »

Le moyen mis en usage par Montaigne est incontestablement le plus propre à rendre l'ordre et le calme à une imagination ainsi troublée. A l'influence néfaste d'une lune, d'un saint du calendrier, de la lumière, etc., opposez une influence contraire dont vous ferez ressortir la supériorité de puissance, et, avec la confiance, vous ramènerez, presque à coup sûr, la possibilité du coït.

On ne croit guère plus, de nos jours, aux sortiléges et aux sorciers; les noueurs d'aiguillette ont perdu leur prestige et le sceptre de leur pouvoir; mais il est encore des esprits faibles ou ignorants qui portent des sachets et des amulettes, ou qui boivent des philtres enchanteurs pour conjurer l'infernale machination des mauvais génies. Respectez ces superstitions, ne détruisez pas ces erreurs; on ne discute pas avec la foi; les objets de son culte sont ici sans danger, tandis que leur proscription amènerait à coup sûr l'accident qu'ils sont destinés à prévenir.

Je ne puis, on le comprend, passer en revue toutes les nuanees des troubles objectifs de l'imagination; l'imagination, cette folle du logis, comme l'appelle Brantôme, participe tellement à tous les actes de la vie, est à ce point tributaire de toutes les croyances et de toutes les superstitions, que prétendre énumérer ses mobiles serait vouloir analyser l'état moral de chaque individu du globe. Il m'a suffi d'avoir indiqué la nature de ces troubles, pour poser la limite de leur cadre et tracer la conduite à tenir en de pareilles circonstances.

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(1) Montaigne, *Essais*, éd. de 1793, t. I, liv. I, ch. xx, p. 105 et 106. *De la force de l'imagination.*

Il me faut maintenant aborder les troubles subjectifs de l'imagination qui constituent, sans aucun doute, l'impuissance par sympathie morale, la plus difficile à guérir.

Ces troubles ont leur source dans la personne même qui les éprouve, en d'autres termes, ils ont pour cause et pour fondement une erreur sur l'énergie copulatrice de l'appareil génital.

Leur point de départ est tantôt dans une croyance purement imaginaire, et tantôt dans une erreur sur un fait réel, soit antérieur, soit actuellement existant.

Sous le premier rapport, une affection des organes génitaux est presque toujours le prétexte derrière lequel s'abrite le malade : l'un se croit atteint de pertes séminales, et par suite d'impuissance; l'autre invoque une dégénérescence de la prostate; comment voulez-vous que j'éjacule, me disait un troisième, j'ai un rétrécissement de l'urèthre qui devient si formidable au moment de l'érection, qu'il est impossible au sperme de s'écouler; et la crainte de l'aspermatisme glaçait ses sens au moment du coït. J'ai donné mes soins à un homme dont les motifs d'impuissance se rattachaient assez singulièrement à des souvenirs de famille : Depuis trois générations, me disait-il, nous sommes tous frappés, à trente ans, d'une maladie bizarre des organes génitaux; rien, dans l'aspect des organes extérieurs, ne dénote ce mal, et il faut même une grande attention et une certaine habitude pour en saisir quelques symptômes douloureux. Le signe principal, et celui qui se manifeste le premier, est un affaiblissement de la virilité; mon grand-père l'éprouva quelques mois avant sa trentième année; mon père le ressentit, au contraire, quelques mois après le même âge; et moi j'en ai constaté l'existence quinze jours avant le trentième anniversaire du jour de ma naissance. — Et cependant, comme son grand-père et son père, le malade qui me consultait n'avait perdu ni les désirs vénériens, ni la faculté érective, ni la faculté éjaculatrice; seulement l'érection et l'éjaculation ne se produisaient que dans le silence de la solitude, soit sous forme de pollutions, soit amenées par la masturbation. Le souvenir de la prétendue infirmité héréditaire inspirait au malade un tel sentiment de honte, et lui donnait une telle certitude d'un échec, que la terreur, en face d'une femme, remplaçait le désir et glaçait l'énergie de l'organe copulateur.

Comme on doit le comprendre, les sujets d'effroi que peuvent invoquer les malades sont aussi innombrables que les fantômes que leur imagination peut créer, et le domaine de l'imagination est infini.

Mais quand ces troubles se rattachent à une erreur dont l'objet est un fait réel, accompli depuis un temps plus ou moins long, ou actuellement existant, on peut concevoir des limites aux causes de ces troubles, parce que la réalité est finie et bornée.

La nosologie est la mine féconde où les malades vont encore puiser leurs prétextes; on se fait difficilement une idée des relations absurdes, extravagantes, qu'on me passe le mot, qu'un esprit troublé et ignorant des choses de notre art, établit entre les organes génitaux et les affections les plus étrangères à cet appareil.

Je fus un jour très-sérieusement consulté par un jeune homme que son tempérament lymphatique et sa constitution malingre condamnaient à de faibles désirs vénériens et à une virilité paresseuse, et qui attribuait, avec une conviction profonde, cet allanguissement du sens génital à une déviation congénitale du sternum dont il était affecté. Un autre, ayant eu connaissance des fables répétées depuis Hippocrate, qui, le premier, en fait mention, sur les rapports sympathiques des oreilles et des organes génitaux, s'imagina qu'il serait atteint d'impuissance (et cette crainte ne tarda pas à amener cet état) parce que, suivant la coutume de son pays, on lui avait percé les oreilles pour y suspendre un bijou.

Mais c'est surtout vers les lésions de l'appareil génital que se portent les préoccupations du malade ; sous ce rapport, les névralgies uréthrales, et celles du col de la vessie jouent un rôle très-important. Ici, les appréhensions du malade ont un prétexte réel, la douleur, et, pour les personnes étrangères à la médecine, la douleur est toujours le symptôme d'une lésion anatomique, d'une affection organique ; l'intermittence même qu'affectent les douleurs névralgiques est, pour une imagination troublée, un motif plus grand d'effroi et de terreur ; c'est dans des circonstances semblables que les malades songent aux dégénérescences de toutes sortes, aux désordres les plus affreux : les ulcérations dans l'urèthre, sur la prostate, dans les vésicules séminales, sont la menue monnaie dont les plus courageux se contentent ; mais le plus ordinairement, et après l'incubation d'une nuit d'insomnie, c'est le cancer, c'est le carcinome, ce sont des tubercules qu'ils disent avoir envahi leur appareil génital et avoir desséché en eux toute source de virilité. C'est l'hypochondrie avec toutes ses étrangetés, avec toutes ses terreurs.

D'autres fois, aucun état morbide n'existe actuellement, et l'imagination du malade est troublée par la crainte des conséquences fâcheuses qu'a pu amener, et qu'a amenées en effet, une affection antérieure, quelque ancienne et quelque bénigne qu'elle ait pu être. Le tabescent guéri croit difficilement au retour de sa virilité; le masturbateur dont les manœuvres ont cessé depuis longtemps entrevoit l'impuissance comme un triste et certain héritage de l'onanisme; la syphilis a, chez l'un, tari la sécrétion spermatique, et, par suite, la source de l'excitation génésiaque; chez l'autre, fixée sur quelque point de l'appareil générateur, elle empêche le jeu régulier des rouages et s'oppose d'une façon quelconque au libre exercice de la fonction copulatrice, etc. Mais de tous ces motifs, il n'en est peut-être pas de plus fréquent, et l'on peut même dire de plus commun, qu'un échec copulateur précédemment essuyé en présence d'une femme. Une mésaventure de ce genre, quelle qu'en soit la cause, laisse dans l'esprit une préoccupation fâcheuse, qui, entretenue et aggravée par l'imagination, détend, pour ainsi dire, les désirs vénériens, et les empêche de réagir suffisamment sur l'appareil copulateur.

Il n'est pas toujours aussi facile qu'on le pense de triompher de semblables appréhensions. Quand le malade s'imagine que son premier échec est sous la dépendance d'une affection quelconque, on peut, en feignant le traitement de cette affection, ramener peu à peu le calme dans son esprit troublé; mais quand l'erreur porte sur l'énergie copulatrice elle-même, c'est-à-dire quand le malade se croit atteint d'une impuissance essentielle, sans relation avec une altération organique quelconque, les difficultés sont énormes. Si l'on se contente de vouloir rassurer le moral du malade, et que l'on essaye de lui prouver que l'appareil génital n'a rien perdu de son énergie, on ne dissipe qu'à moitié, si même on y parvient, ses craintes chimériques; si, au contraire, feignant de partager son erreur, on prescrit, non une médication, mais un aphrodisiaque, on s'expose à déplacer ou même à augmenter les préoccupations du malade, qui, au moment du coït, alors que l'attention doit être complétement absorbée dans l'ivresse des désirs, analyse ses moindres sensations pour s'assurer de l'effet de l'agent prescrit.

Cependant cette dernière méthode est la moins incertaine; mais en l'employant, le médecin doit absolument user de toute son autorité; il doit promettre le triomphe, non plus avec le doute scientifique, mais avec l'assurance d'une conviction profonde. En pareille occurence, l'hésitation est funeste. La nature de la prescription importe peu; il faut, avant tout, paraître assuré de son efficacité. M. le docteur Amédée Latour a rapporté, dans la séance du 3 janvier 1843 de la *Société médicale du Temple*, un exemple de ce genre : « Comme chez la plupart des gens du monde, dit-il avec raison, les conseils les plus sages et les plus opportuns perdraient de leur prix s'ils n'étaient corroborés par quelque prescription pharmaceutique, je crus devoir prescrire quelques toniques, et je fis choix du quinquina et du safran. Mais surtout, la saison étant encore convenable, j'engageai fortement les deux époux à aller prendre quelques bains de mers. J'annonçai *avec assurance* la guérison pendant le voyage (1). »

Ce fut cette assurance qui constitua la partie réellement active de la médication.

Les faits de cette nature se rencontrent tous les jours dans la pratique, que les causes de l'impuissance se rattachent ou à un état morbide antérieur, ou à l'affaiblissement prétendu de l'appareil génital, ou à toute autre chimère de la folle du logis.

Je n'ai pu rapporter ici, on le comprend, que les circonstances les plus ordinaires, que les sujets d'effroi les plus communs; mais on conçoit que leur catalogue puisse être plus étendu et embrasser le cadre tout entier de la nosologie. Leur énumération, fastidieuse au dernier point, ne jetterait aucune lumière sur leur histoire, et ne révélerait aucune variété du type, qui est constamment le même.

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(1) *Gazette des hôpitaux*, 1842, p. 95.

Les divisions que j'ai établies me paraissent suffisantes pour formuler un bon diagnostic différentiel entre les troubles si divers de l'imagination, et pour leur opposer une *médication* convenable, si je puis me servir de ce mot.

Qu'on me permette, pour l'intelligence de la thérapeutique, de rappeler ces divisions.

Les troubles de l'imagination, dont une erreur ou une fausse croyance sont essentiellement la cause, se distinguent :

1° En troubles objectifs ;

2° En troubles subjectifs.

Ces derniers se rapportent :

Ou à une erreur que rien n'autorise ;

Ou à une erreur qui a pour fondement un fait réel actuellement existant ou disparu depuis un temps plus ou moins long.

Évidemment, si l'on saisit bien toutes les nuances qui séparent ces états divers, on conviendra qu'une même thérapeutique n'est pas applicable partout, et que la conduite du médecin ne peut être identique dans tous les cas.

Et d'abord, en thèse générale, est-il opportun de commencer par dissuader le malade, par attaquer de front et de prime abord ses fausses croyances, ses erreurs ? Je ne le pense pas ; avant toutes choses, il importe de capter la confiance du malade ; il faut que de son confident, le médecin, devienne son ami, et qu'il subjugue plutôt par des paroles de commisération que par le ton impératif de l'autorité scientifique. En rompant trop vite en visière, il s'expose, presque à coup sûr, à faire douter de ses connaissances, et souvent alors tout est compromis, car la suspicion dans l'esprit d'un malade imaginaire, d'un hypochondriaque, est une cuirasse terrible dont il est difficile de triompher.

J'estime donc que l'on doit, en thèse générale, commencer par sembler croire à la réalité de l'impuissance, par prescrire même une médication en apparence active, et, dans ce cas, il faut insister sur les espérances que font concevoir le pronostic porté et le traitement ordonné.

Chez quelques malades, il importe de soutenir cet innocent mensonge jusqu'au bout, principalement chez ceux qui se croient atteints de quelque maladie grave; c'est en pareille occurence qu'il faut savoir rattacher l'impuissance à l'affection imaginaire et paraître accorder toute son attention à cette dernière, dont la guérison doit fatalement restituer aux organes génitaux leur énergie copulatrice.

La même règle de conduite est également prescrite dans les circonstances analogues au fait raconté par Montaigne : à une superstition il faut opposer une superstition plus grande; on ne tue la magie que par des moyens magiques.

Quand le malade a acquis en son médecin une foi inébranlable, ou même une confiance assez vive, et si la raison est accessible par quelque point au milieu des fantômes que lui crée l'imagination, on peut aborder son erreur et la combattre soit par l'absurde, soit par des arguments sérieux, soit par tous autres moyens qu'inspirent les circonstances. Mais gardez-vous d'entrer trop hardiment dans cette voie : avant de vous y engager, sondez, connaissez bien les dispositions de votre malade; le moindre écart peut tout perdre, car l'imagination soucieuse s'effraie d'une ombre, s'épouvante d'un soupçon.

Quand le premier pas est franchi, il faut marcher résolument dans le sentier tracé; il faut prendre l'erreur corps à corps, l'étreindre, la serrer, la frapper avec toutes les armes; aucun coup n'est trop rude. Malheur au médecin qui faiblit! qu'il use largement de toute son autorité, de tout son ascendant; il doit aller jusqu'à faire comprendre au malade que ses devoirs lui imposent l'obligation de ne prescrire aucun traitement, car la médecine a pour mission de rétablir et non de troubler les fonctions de l'organisme.

Ce terrain est glissant ; il faut, pour s'y engager, être sûr tout à la fois de la confiance et de la raison de son malade, double condition difficile à rencontrer dans les conditions morales que j'examine; le plus généralement contre les troubles de l'imagination, il faut savoir se condamner à un mensonge, que le but légitime et que la science autorise, et le soutenir le plus souvent pendant tout le cours de la médication.

Telle est la base de cette sorte d'impuissance par sympathie morale ; fondement bizarre qui distingue la thérapeutique des troubles de l'imagination de celle des troubles de la raison, et surtout aussi de celle des troubles des facultés affectives, comme je le montrerai tout à l'heure, et qui justifie, s'il en est besoin encore, les divisions et les subdivisions que j'ai précédemment admises. On va voir, en effet, que si l'imagination, même dans ses écarts, a horreur de la vérité, la raison, au contraire, ne peut être ramenée dans sa voie que par les conseils et le spectacle de la réalité. A chaque élément de notre âme conservons son essence : à l'imagination le mensonge, à la raison la vérité.

II. — *Troubles de la raison.* — La raison n'est jamais la dupe d'une chimère; elle n'est que la victime de la réalité. C'est là la physionomie propre qui caractérise les troubles de cette faculté, et qui les doit toujours et facilement faire distinguer des troubles de l'imagination que je viens d'étudier.

A proprement parler, la raison, et il ne s'agit ici en aucune manière de la folie, la raison ne s'altère pas; plus que toute autre faculté peut-être, elle subit, dans le choix de ses déterminations, l'empire de toutes sortes d'influences physiques, organiques, morales ou sociales, et cette subordination explique les différences si tranchées que l'on observe dans les raisonnements et les jugements, par exemple, du jeune homme et du vieillard, du lettré et du paysan, etc., etc.

Cette dépendance de la raison n'est pas, en réalité, constituée par un affaiblissement ou un dérangement de ses moyens d'action, mais bien par un effacement, si je puis m'exprimer ainsi, de sa personnalité; en d'autres termes, les influences, dont je parlais tout à l'heure, agissent primitivement sur une ou plusieurs des facultés intellectuelles ou affectives, lesquelles, par les troubles dont elles sont susceptibles, masquent les déterminations de la raison, étouffent sa voix, et, par suite, la rendent impropre à réagir contre la réalité. Ainsi, au moment du coït, la vue des règles, un bruit inattendu, éveillent dans l'imagination mille fantômes hideux qui, bourdonnant autour de la raison, empêchent l'homme de se rendre un compte exact du sang qu'il aperçoit et du bruit qu'il entend; de même pour les facultés affectives : l'annonce subite, au moment de l'acte, d'un malheur ou d'une grande joie, remplit l'âme d'un sentiment si énergique que la raison, comme submergée dans un océan de douleur ou d'ivresse, ne parvient même plus à se faire entendre.

En conséquence de cette subordination, les troubles de la raison doivent être distingués, selon qu'ils sont sous la dépendance de l'imagination ou sous l'empire des facultés affectives; la physionomie qu'ils empruntent à l'une ou à l'autre de ces deux interventions les fait assez facilement reconnaître, pour qu'il soit inutile d'entrer ici dans des détails qui, peut-être fastidieux, seraient nécessairement incomplets.

La distinction que j'établis peut, au premier abord, paraître bien métaphysique pour un ouvrage de la nature de celui-ci; mais si l'on considère à combien de sources s'alimente l'impuissance par sympathie morale, si l'on réfléchit combien ces sources sont parfois mystérieuses et secrètes, et si l'on se rappelle combien est indispensable, pour le traitement de l'anaphrodisie, la connaissance des causes qui ont fait naître et entretiennent l'affection, on me pardonnera l'excursion que je me suis permise dans le domaine de la psychologie, car, ainsi qu'on va le voir, elle trace au praticien une route moins obscure et moins épineuse que celle de mes devanciers.

Dans la majorité des cas, la raison ne perd que momentanément ses droits, et l'impuissance qui en résulte est, comme les troubles de cette faculté, essentiellement fugace et passagère. Les exemples que j'ai rapportés plus haut, tels que ceux de l'impuissance amenée par la vue des règles, par l'audition d'un bruit inattendu, par la nouvelle d'un malheur ou d'une grande joie, etc., font comprendre que la force virile, un instant suspendue, rentre bientôt dans toute la plénitude de ses prérogatives, sans que la médecine ait jamais à intervenir.

Cependant la cause première de ces troubles, exaltation de l'imagination ou émotion des facultés affectives, peut avoir été si profonde qu'elle survive au fait qui lui donna naissance, et se perpétue pendant un temps plus ou moins long. Je me rappelle un malade dont l'impuissance datait du jour de la mort de son fils, et qui échouait à chaque tentative du coït, parce que son imagination, établissant une espèce de rapport entre l'acte qu'il allait accomplir et la perte qu'il avait faite, lui rappelait, avec l'image de l'enfant, toute l'étendue de sa douleur.

J'ai précédemment rapporté le fait de ce malheureux devenu impuissant à la suite de la frayeur qu'il éprouva pendant l'accident survenu, en 1839, sur le chemin de fer de Versailles (rive gauche), sans que quelque autre symptôme, soit moral, soit physique, fît soupçonner une lésion des centres nerveux.

Bien évidemment, selon que les troubles de la raison sont sous la dépendance de l'imagination ou des facultés affectives, la conduite à suivre est différente. Dans le premier cas, le médecin demande à l'esprit ses moyens d'action ; dans le second, au contraire, il ne les trouve que dans le cœur. — On dissipe les fantômes de l'imagination, non par des larmes de joie ou de douleur, mais par le contraste d'autres fantômes, par la raillerie, par le raisonnement, etc., tandis que ces armes s'émoussent contre une âme ivre de bonheur ou brisée par le chagrin.

Ces considérations doivent suffire pour indiquer la conduite que le médecin doit tenir; cependant ne peut-on pas demander si, comme dans les troubles de l'imagination, il n'est pas nécessaire de recourir à quelque prescription pharmaceutique, pour contenter au moins les exigences quelquefois absurdes des gens du monde ?

On peut répondre, en thèse générale, que les prescriptions pharmaceutiques sont toujours d'un effet salutaire dans l'impuissance par sympathie morale, parce que le malade, dans la très-grande majorité des cas, n'a recours à notre art que pour les médicaments qu'il donne. Il faut donc établir, comme règle générale, dans les circonstances dont je parle, la nécessité d'une ordonnance pharmaceutique; mais il faut prendre garde aussi de ne pas tomber dans un écueil contraire, et de ne pas se faire accuser d'erreur par ceux qui, se rendant parfaitement compte de leur état moral, ne viennent demander au médecin que les règles d'une conduite à suivre ou les conseils de l'amitié.

A moins de spécifier tous les troubles moraux, ce qui est impossible, on ne peut rien prévoir ni préjuger d'avance. Les indications spéciales ressortent de circonstances individuelles dont l'appréciation est entièrement abandonnée au tact et au jugement du médecin. C'est dans cette appréciation, bien plus que dans des préceptes formulés dans un livre, que l'homme de l'art doit chercher ses inspirations et trouver sa règle de conduite.

B. — *Facultés affectives.*

La physiologie, si je puis me servir de cette expression, la physiologie des fonctions affectives de notre nature morale est encore plus remplie que la psychologie *intellectuelle* de confusion et de malentendus : jetant dans un pêle-mêle inextricable toutes les aspirations de l'âme sensitive, on en a dressé une liste plus ou moins méthodique, et on les a ensuite, sous le nom de passions, classées dans un ordre la plupart du temps fantaisiste.

Cependant une distinction rationnelle n'est pas moins importante à établir parmi les facultés affectives que parmi les facultés intellectuelles ou que parmi les fonctions de l'économie animale, et l'on s'étonne de l'arbitraire avec lequel ont été divisés les sentiments de l'âme, quand la nature elle-même a indiqué les bases de cette classification.

En effet, lorsqu'on analyse les facultés de la vie affective, on ne tarde pas à se convaincre qu'elles peuvent toutes être ramenées à deux types fondamentaux, la sympathie et l'antipathie, dont le premier nous pousse vers l'objet qui a ému notre âme, et dont le second nous en éloigne au contraire.

Mais de même que toutes les fonctions de l'organisme qui servent à nous mettre en relation avec le monde extérieur ont des intermittences d'action, de même les fonctions de la vie affective n'ont pas une continuité absolue d'exercice ; cette suspension de l'activité affective, en arrachant le consensus intime à l'influence de ses excitants naturels, constitue un état passif de l'âme dont l'étiologie de l'impuissance doit tenir grand compte, comme on le verra tout à l'heure.

Je donne le nom d'*apathie* à cette absence permanente ou momentanée de la sensibilité morale.

Les facultés affectives, quand elles s'accomplissent selon le type normal d'activité inhérente à chaque idiosyncrasie, s'appellent *sentiments moraux;* quand, au contraire, elles s'exécutent avec une énergie et une impétuosité que ne comporte pas le type régulier des autres fonctions de l'organisme, elles prennent le nom de *passions*, qui bientôt entraînent le délire et la folie, si la faculté surexcitée absorbe et annihile l'exercice des autres facultés.

La distinction que je cherche à établir ici me paraît de la plus haute importance, car si le sentiment est l'expression physiologique d'un phénomène de la vie morale, la passion en est une manifestation morbide qui n'est jamais sans influence sur l'exercice régulier des fonctions de l'organisme ou des facultés de l'esprit. — L'histoire des sentiments est du domaine de la physiologie, tandis que l'étude des passions incombe fatalement à la pathologie.

Mais, ainsi que je l'ai laissé pressentir tout à l'heure, la passion est un état essentiellement relatif, et qui se mesure, non sur un type donné, mais suivant les conditions d'activité que chaque individu porte en lui; ainsi l'homme du Nord se croirait à coup sûr sous l'empire de la passion, s'il avait l'enthousiasme et l'exaltation des sentiments de l'homme du Midi. *Chacun sent à sa manière*, dit-on communément, et pour être dans le vrai, il faut que chacun mesure ses passions au thermomètre de ses sensations et de ses émotions.

La passion n'étant que l'exaltation des facultés affectives, leur dénombrement et leur classification sont donc les mêmes que ceux des sentiments moraux; nous aurons donc :

1° Les passions sympathiques;

2° Les passions antipathiques.

Ou pour les exprimer par les mots propres et consacrés par le langage de tous, nous aurons :

1° L'amour;

2° La haine,

avec les nuances infinies dont les hasards innombrables de la vie colorent ces deux manifestations extrêmes de l'âme.

Nous allons donc rechercher, au point de vue qui nous occupe, l'influence exercée sur la fonction copulatrice; 1° par l'absence des sentiments moraux ou *apathie;* 2° par l'exaltation des sentiments sympathiques ou *passions attractives;* 3° par l'exaltation des sentiments antipathiques ou *passions répulsives.*

1° *Apathie ou indifférence amoureuse.* — Cet état étrange de l'âme, que ne sauraient émouvoir les plus grands comme les plus doux spectacles de la nature, est lié, tantôt à certaines circonstances organiques, comme le tempérament lymphatique, la faiblesse qui suit les longues maladies, les hémorrhagies copieuses, etc., etc., et tantôt à certaines conditions du moral lui-même.

Dans le premier cas, l'absence des désirs vénériens se prolonge plus ou moins longtemps, et sa durée est en rapport avec celle des circonstances organiques qui la tiennent sous leur dépendance.

Dans le second cas, la condition morale qui entraîne l'apathie tient à plusieurs causes : ou bien elle est le résultat de l'exercice exclusif d'une faculté morale, soit intellectuelle, soit affective, autre que la faculté génésiaque, et qui absorbe à son profit toute l'activité de l'âme, ainsi qu'il arrive dans les études abstraites, dans l'exaltation des idées religieuses, dans celle d'un sentiment de haine, de vengeance, etc., etc.; ou bien elle est amenée par la perversion, par l'aberration ou par tout autre état particulier de la faculté érotique elle-même, comme chez les sodomistes et les masturbateurs, par exemple, dont les organes copulateurs ne répondent plus à leurs excitants naturels, tant internes qu'externes.

Je me suis précédemment occupé de l'empire qu'exercent sur les désirs vénériens les conditions vitales de l'organisme;

et j'ai suffisamment étudié l'influence de ces conditions, tant physiologiques que morbides, pour qu'il soit inutile d'y revenir ici.

Quant à ce qu'on pourrait appeler prédisposition morale, j'ai également, et par avance, défloré ce sujet en traitant, soit des excès des travaux de cabinet, soit des troubles des facultés intellectuelles, et je compléterai tout à l'heure ce cadre en parlant des troubles des facultés affectives.

Il ne me reste donc à examiner ici que cet état particulier de l'âme, dans lequel l'homme, sans haine, sans motifs légitimes d'éloignement pour la femme qui lui donne ses caresses, ne trouve dans son cœur que la froide indifférence qui, en étouffant les désirs, arrête et suspend toute activité dans l'appareil copulateur.

On pourrait désigner cet état par les mots d'*apathie essentielle.*

Cette apathie est amenée par les causes les plus diverses: chez le pédéraste et le masturbateur, la faculté excitatrice du sens générateur semble s'être fait une autre nature sous l'empire de l'habitude, et avoir déraillé de sa voie normale pour subir l'influence exclusive d'excitations factices; chez ceux-ci, un souvenir, quelle que soit la sphère où il se déroule, a un pouvoir analogue à celui de l'habitude; chez ceux-là enfin, la source de l'indifférence amoureuse se perd dans ce labyrinthe inextricable que peuplent le caprice, les bizarreries de caractère et les excentricités de toutes sortes.

L'éloignement des pédérastes, des sodomistes, des tribades et des masturbateurs des deux sexes pour les rapprochements sexuels est assez connu pour qu'il soit inutile d'en rapporter des exemples. Celui qui est sous la dépendance d'un caprice, d'une étrangeté de mœurs ou de caractère, de la mode même, est tellement individuel qu'il échappe en quelque sorte à l'analyse. Il faudrait faire l'histoire des bizarreries de l'esprit humain, ce que j'estime impossible, bien que des essais, je crois, aient été tentés sur ce sujet.

Cependant, je rapporterai le fait suivant, comme spécimen de ces bizarreries, et aussi pour l'enseignement thérapeutique qui en découle.

M. X..., fils d'un général du premier empire, avait été élevé dans le château de son père, et n'en était sorti, à l'âge de dix-huit ans, que pour entrer à l'École militaire. Pendant cette longue solitude à la campagne, il avait été initié, à l'âge de quatorze ans, aux plaisirs de l'amour, par une jeune dame, amie de sa famille. Cette dame, alors âgée de vingt et un ans, était blonde, portait des cheveux à l'anglaise, c'est-à-dire en tire-bouchons, et, eu égard aux précautions qu'elle était obligée de prendre pour cacher à tous les regards son intrigue amoureuse, elle n'avait jamais de rapports avec son jeune amant que dans un costume de jour, c'est-à-dire chaussée de brodequins, serrée dans un corset et portant une robe de soie.

Tous ces détails, que j'énumère avec intention, eurent la plus grande influence, non-seulement sur la faculté excitatrice du sens génital, mais encore sur toute l'existence de M. X...

La jeune dame, fort passionnée, à ce qu'il paraît, abusa des forces du jeune néophyte, et il ne fallut rien moins que le régime sévère et la continence de l'École militaire, pour rendre aux organes génitaux l'énergie qu'avaient compromise des pratiques anticipées et trop fréquentes.

Mais lorsque, rendu à la liberté et aux plaisirs de la vie de garnison, M. X... voulut jouir des droits que la nature semblait lui avoir restitués, il s'aperçut que les désirs vénériens ne s'éveillaient qu'auprès de certaines femmes, et avec le concours de certaines circonstances; ainsi, une femme brune n'excitait en lui aucune émotion, et le costume de nuit suffisait pour éteindre et glacer tout transport amoureux.

Pour que son âme tressaillît sous l'aiguillon du désir et de la volupté, il fallait que la femme fût blonde, coiffée à l'anglaise, chaussée de brodequins, emprisonnée dans un corset, vêtue d'une robe de soie, en un mot réunît toutes les particularités que le souvenir de M. X... gardait de ses premiers ébats érotiques.

Ce n'était point un de ces souvenirs d'amour insensé, dont le magique pouvoir s'étend sur toute une existence. Dans ses premiers rapprochements sexuels, M. X... n'avait apporté que l'appoint de ses organes; son cœur était toujours resté étranger à cette union, dont le but était le plaisir; et, à vingt-cinq ans d'intervalle, M. X..., en me consultant pour son étrange infirmité, m'avoua n'avoir aimé, *avec le cœur*, qu'une seule femme, à laquelle il n'avait jamais osé adresser ses hommages, parce que, coïncidence bizarre ! cette femme était brune.

Sa fortune, son nom, sa position sociale, faisaient depuis longtemps un devoir à M. X... de se marier, et il avait toujours résisté aux sollicitations de sa famille et de ses amis, parce qu'il se savait incapable d'exercer le coït dans le négligé de la couche conjugale. Certes, un semblable motif eût été difficile à pénétrer, car l'infortuné jouissait d'une santé à toute épreuve, était d'un tempérament bilioso-sanguin, avait une taille au-dessus de la moyenne, et une constitution si robuste que, pendant plus de quinze ans, il avait été officier dans un régiment de grosse cavalerie.

Bien évidemment M. X... n'était atteint que d'une impuissance essentiellement relative, car lorsque la femme était blonde et lorsque les conditions énumérées plus haut se trouvaient réunies, il accomplissait la fonction copulatrice avec toute l'énergie d'une forte constitution et l'ardeur d'un tempérament amoureux.

Rentré dans la vie civile, et tourmenté plus que jamais par sa famille au sujet de son mariage, il voulut tenter un dernier effort et vint me consulter.

Pendant la longue conversation que nous eûmes ensemble, e crus m'apercevoir que M. X... n'avait qu'une foi douteuse, non-seulement en moi, mais encore dans la thérapeutique de l'impuissance, et que, par conséquent, il me fallait, avant toute chose, et par quelque moyen que ce fût, conquérir sa confiance en faveur de la science et en même temps en faveur de l'efficacité du traitement que je lui prescrirais.

Dans de semblables occurrences, tout discours est superflu et tout raisonnement se brise contre l'incrédulité systématique du malade; il lui faut un phénomène physique, palpable, matériel contre la négation duquel sa raison se révolte; ce phénomène obtenu, sa confiance est d'autant plus absolue que son incrédulité a été plus profonde.

En conséquence, je résolus de frapper un grand coup. Sachant, par l'expérience que j'en avais acquise, que la moitié seule de mon ordonnance serait exécutée, je prescrivis une potion cantharidée assez énergique, et conseillai le coït avec une femme brune et sans corset, deux heures après l'ingestion du médicament.

Ainsi que je l'avais prévu, la potion fut avalée, mais le rapprochement sexuel ne fut pas même tenté, car jamais l'homme ne s'expose à un échec amoureux qu'il regarde comme certain.

Mais l'effet que j'attendais de l'emploi des cantharides s'étant produit, et le malade ayant été tourmenté toute la nuit par une érection qui n'était pas sans quelque souffrance, la scène, changea de face : M. X... crut avoir enfin rencontré l'agent médicamenteux qui seul pouvait contre-balancer la fâcheuse influence de son moral.

Le lendemain, ne pouvant venir me revoir, mais voulant reprendre un second flacon de ma *liqueur magique*, comme il m'écrivait, il me demanda s'il pouvait se servir encore de la même ordonnance, ce à quoi je m'opposai, dans la crainte d'une aggravation de la cystite, et lui envoyai une prescription où les cantharides ne jouaient aucun rôle.

A partir de ce jour, toutes les potions que j'étais obligé de prescrire, étaient inertes, et produisaient cependant autant d'effet que la première; le malade pouvait exercer le coït avec une femme brune et dépouillée de son corset.

Pendant assez longtemps, pendant plus de six mois, les rapprochements sexuels ne furent possibles qu'avec l'aide d'une potion qui était censée contenir l'agent médicamenteux assez puissant pour conjurer l'empire de l'âme; ce ne fut que progressivement et à la longue que M. X... parvint à se passer, pour l'accomplissement de l'acte copulateur, du concours de la médecine; aujourd'hui même, il est si parfaitement convaincu que le médicament prescrit a exclusivement agi sur ses organes, que ce serait, à coup sûr, s'exposer au retour des phénomènes morbides, si l'on parvenait à le convaincre que le traitement qu'il a subi a été un traitement purement moral.

La conduite que j'ai tenue dans la circonstance que je viens de rapporter, quoique couronnée d'un plein succès, ne saurait être conseillée d'une manière absolue; la règle à suivre se tire des causes de l'apathie elle-même. Cependant, comme auxiliaire de cette médication spéciale, individuelle, pour mieux dire, il faut souvent avoir recours aux excitants moraux dont j'ai plusieurs fois parlé dans le cours de cet ouvrage, ainsi qu'aux moyens physiques dont l'effet excitateur se fait principalement sentir au cerveau, comme un repas délicat, l'usage modéré des liqueurs alcooliques, la musique, la lumière, les parfums, etc., et enfin à ceux qui s'adressent de préférence aux facultés intellectuelles, afin que leur excitation éveille le consensus génésiaque endormi.

D'ailleurs, dans la très-grande majorité des cas, l'espèce d'impuissance que j'examine ici est relative et temporaire, et il suffit, pour la dissiper, qu'il entre dans le cœur du malade un de ces divins rayons d'amour que la femme sait si bien allumer au feu de sa coquetterie. Que le médecin ne dédaigne point cet auxiliaire; il est presque invincible s'il agit de concert avec l'amante ou l'épouse de son malade.

2° *Passions sympathiques.* — Quand on considère que l'acte copulateur est sous la dépendance la plus entière des sentiments attractifs, on est conduit à proportionner l'énergie de l'acte, et par conséquent l'activité de l'appareil copulateur, à la force de ces sentiments attractifs, en d'autres termes, et pour employer un langage plus usuel, on est amené à penser que le coït est d'autant plus facile et plus complet que l'amour qui le sollicite est plus violent et plus exalté.

Cette loi psycho-physiologique dont il est impossible de ne pas reconnaître la justesse et la réalité, souffre cependant des exceptions assez nombreuses pour qu'il soit utile de nous y arrêter un instant.

Quand le désir ou plutôt quand l'instinct du rapprochement des sexes a quitté ce vague nuageux qui, semblable à une atmosphère légère, entoure notre âme, et vient se placer sous l'empire de la conscience; quand ses aspirations, abandonnant les vastes horizons de l'inconnu, prennent un corps pour ainsi dire, naissent à la vie morale et se concentrent dans la contemplation d'un être fini et réel, l'instinct devient sentiment, le désir se fait amour.

Fidèle aux lois de son essence, l'amour, cette douce et magique expression de la portion sympathique de notre âme, s'exaspère des lenteurs et s'irrite des obstacles; pour vaincre les entraves qui lui cachent le but, il appelle à son aide toutes les forces de l'organisme, toutes les grandeurs de l'esprit, toute l'exaltation des sentiments, et va même chercher des ressources dans le monde des rêves et des enchantements. Au milieu de cette confusion étrange, de cette tension exagérée de tous les ressorts de la vie, l'âme n'exerce plus qu'un empire douteux, qu'une puissance tremblante; si tout à coup elle est inondée d'un bonheur longtemps caressé, si elle est éblouie par l'apparition inattendue d'une félicité prochaine, elle se noie elle-même dans une immensité de joies et de voluptés, abandonnant à leur délire, sans gouvernail et sans boussole, toutes les forces de l'organisme : « Si l'on considère, dit Virey, que l'âme éperdue nage dans un océan de plaisirs; que toutes les fibres du corps frissonnent sous les plus tendres caresses ; que l'on est plongé dans un enchantement universel, et comme ravi en extase de l'excès de son bonheur, l'on comprendra qu'il faut revenir de cette secousse générale pour se livrer plus spécialement à une jouissance particulière. Non, sans doute, on n'est pas froid dans ces premiers instants du délire de la volupté ; on s'y sent, au contraire, comme englouti et submergé, on se cherche et l'on ne se trouve pas. Interdit de ce phénomène, et sentant néanmoins sa vigueur et la plénitude de sa force, l'homme se croit lié et comme enchaîné dans le cours de sa victoire (1). »

Les exemples de ce phénomène étrange ne sont pas rares, et on les rencontre surtout chez les personnes nerveuses, mélancoliques, et dont l'esprit se plaît dans les rêveries. Un des acteurs les plus distingués de Paris éprouva cet accident la première nuit de ses noces, bien qu'il eût eu antérieurement des rapports avec la femme qu'il épousait; seulement ces rapports ne s'étaient produits qu'au milieu de la gêne et de la contrainte imposées par la surveillance des parents de la jeune fille, et le bonheur dans lequel le plongea la libre possession de ces charmes qu'il n'avait fait qu'effleurer, ne valut pas pour lui la contrainte à laquelle il était auparavant condamné.

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(1) Virey, *De la femme sous ses rapports physiologique, moral et littéraire.* 2^e éd. 1825, notes, p. 390.

Dans les *Essais de médecine d'Édimbourg*, on trouve rapporté, par le docteur Cockburn, un exemple d'autant plus remarquable de l'effet anaphrodisiaque de l'excès d'amour, que l'impuissance qui en fut la suite se traduisit, non par le défaut d'érection de la verge, ce qui est le cas le plus commun, mais par l'impossibilité de l'éjaculation, par ce que j'ai nommé l'*aspermatisme*.

Qu'on me permette de rappeler une partie de ce fait curieux dont j'ai précédemment donné la narration entière (1) : « Un noble Vénitien, dit-il, épousa à l'âge où l'amour favorise un homme avec complaisance une jeune demoiselle très-aimable, avec laquelle il se comporta assez vigoureusement ; mais l'essentiel manquait à son bonheur : tout annonçait dans ses rapports le moment d'extase, et le plaisir qu'il croyait goûter s'échappait. L'illusion lui était plus favorable que la réalité, puisque les songes qui succédaient à ses efforts impuissants le réveillaient par des sensations délicieuses, dont les suites n'étaient pas équivoques sur sa capacité. Cet époux malheureux, rassuré sur son état, voulait-il prouver efficacement sa puissance et réaliser ses plaisirs, il en procurait sans pouvoir les partager ; en un mot, l'érection la plus forte n'était pas accompagnée de ce jaillissement précieux qui fait connaître toute l'étendue de la volupté. »

Il est probable, comme je l'ai dit précédemment, que cet aspermatisme tenait à un état spasmodique des conduits éjaculateurs, lequel reconnaissait lui-même pour cause un excès d'amour, puisque cette difficulté d'éjaculation ne paraît pas avoir existé avant le mariage du malade qui ne serait pas, à coup sûr, entré dans la couche nuptiale, avec une semblable infirmité.

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(1) Voyez la page 188.

L'aspermatisme, dans le sens rigoureux que j'ai donné à ce mot, est la forme la plus rare de l'impuissance par excès d'amour : en dehors des cas exceptionnels comme celui cité par Cockburn, cette variété d'anaphrodisie se traduit, ou par le manque d'érection, ou par une énergie, au contraire, qui n'est autre chose que le priapisme; mais quel que soit le caractère qu'elle revête, sa durée est ordinairement assez courte, et, sous ce rapport, Montaigne a pu dire avec raison aux époux trop amoureux l'un de l'autre : « Les mariez, le temps estant tout leur, ne doibvent ny presser ny taster leur entreprinse, s'ils ne sont prests. Et vault mieulx faillir indécemment à estreiner la couche nuptiale, pleine d'agitation et de fiebvre, attendant une et une aultre commodité plus privée et moins allarmée, que de tomber en une perpétuelle misère, pour s'estre estonné et désespéré du premier refus. Avant la possession prinse, le patient se doibt à saillies et divers temps, légierement essayer et offrir, sans se piquer et opiniastrer à se convaincre définitivement soy-mesme (1). »

L'impuissance par excès d'amour mériterait à peine de nous arrêter si elle n'avait pas secondairement une influence fâcheuse sur l'imagination : elle est souvent, en effet, le point de départ d'appréhensions qui, bien que chimériques, jouent, ainsi que nous l'avons vu, un rôle très-important dans l'acte copulateur, en paralysant toute énergie virile. Par conséquent, il est utile, surtout chez les esprits facilement impressionnables, de prévenir un premier échec; si la morale et les devoirs du mariage ne réprouvaient formellement un semblable expédient, je dirais avec Montaigne, qu'on ne peut trop se lasser de citer en pareille matière : « J'en sçay à qui il a servy d'y apporter le corps mesme, demy rassasié d'ailleurs, pour endormir l'ardeur de cette fureur : et qui, par l'aage, se trouve moins impuissant de ce qu'il est moins puissant (1). »

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(1) Montaigne, *Essais*, t. I, ch. xx, p. 107, édit. 1793.

Les bains prolongés, la diète, le régime lacté, l'habitation à la campagne, le calme de l'esprit et les distractions suffisent d'ordinaire pour ramener l'équilibre dans l'exercice de toutes les fonctions; chez les individus pléthoriques, on peut aller jusqu'à la saignée générale, ou se contenter de l'application de quelques sangsues à la nuque, ou de fomentations froides sur la partie du crâne correspondant au cervelet. Chez les personnes nerveuses, au contraire, les opiacés, les bromures ou les antispasmodiques, ou les uns et les autres combinés ensemble, rendent de très-grands services; mais tous ces moyens doivent céder le pas au raisonnement, et, avant de recourir à une thérapeutique quelconque, le médecin doit toujours faire un appel pressant à la raison de son malade.

3° *Affections antipathiques.* — Planque rapporte d'après Blegny (*Journal de médecine*, t. I, p. 439), qu'une femme éprouvait pour son mari un tel sentiment de répulsion, qu'elle était prise de mouvements spasmodiques, et tombait même en syncope à la vue seule de l'homme qu'on lui avait fait épouser.

Si l'antipathie est capable de produire chez la femme de semblables effets, on comprend sans peine l'action débilitante qu'elle doit exercer sur les organes de l'homme, si directement soumis à l'empire de l'âme.

Certes, les exemples de cette influence néfaste ne manquent pas, et ils expliquent, sans les légitimer pourtant, les demandes si nombreuses de nullité de mariage par l'épreuve du congrès.

Est-il besoin d'insister sur cette cause si manifeste d'impuissance, quand on connaît l'essence de l'amour et les lois qui président au rapprochement des sexes? Ne suffit-il pas d'énoncer cette proposition comme un axiome, à savoir : que toutes les nuances, si nombreuses et si variées qu'elles soient, du sentiment répulsif, depuis la simple froideur jusqu'à la haine la plus profonde, sont les ennemis les plus implacables des excitations génésiques.

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(1) *Loc. cit.*, p. 104.

Si dans ces conditions fâcheuses le coït doit être exercé — et il est malheureusement des circonstances sociales qui exigent un pareil sacrifice — la médecine ne peut intervenir, car elle n'a dans son arsenal thérapeutique une arme ni assez fortement ni assez finement trempée pour éteindre ou même calmer la haine dans un cœur qui s'en enivre. C'est à l'amitié qu'il faut confier le soin de la médication, pour le succès de laquelle le temps et les distractions sont aussi de puissants auxiliaires.

SECTION DEUXIÈME

IMPUISSANCE CHEZ LA FEMME

Il est incontestable que si j'avais enfermé le mot impuissance dans les limites étroites de la définition que l'on donne ordinairement à cette expression, à savoir : *inaptitude permanente ou temporaire à la copulation*, la femme, en dehors de quelques rares vices de conformation et de quelques cas de maladies, serait peu exposée à cette infirmité, car, ainsi que le dit Virey, elle peut toujours recevoir passivement les caresses de l'homme.

Cependant le rôle de la femme, dans le coït normal, n'est pas entièrement passif; elle ne peut être déshéritée des douces émotions et du plaisir attachés à l'acte de la copulation, car sa volonté est nécessaire pour la réalisation de cet acte, puisqu'elle peut s'opposer à son accomplissement, en refusant les approches de l'homme. Il faut donc à la femme un appât, un mobile pour ne pas repousser l'accouplement, et en même temps, comme récompense, si l'on peut ainsi dire, attachée à l'accomplissement de toute fonction physiologique, une sensation de bien-être et un sentiment de bonheur.

Les désirs et le plaisir vénériens incombent donc à la femme au même titre qu'ils appartiennent à l'homme, et les uns et les autres rentrent dans l'ordre normal des conditions physiologiques du coït.

Le coït est donc chez la femme, comme chez l'homme, soumis à de certaines conditions; or, s'il est incontestable qu'un état pathologique existe toutes les fois qu'une fonction ne s'accomplit pas dans les limites qui lui sont tracées par la nature, il faut admettre que l'absence d'une ou de plusieurs des conditions du coït normal chez la femme constitue un état morbide ou pathologique.

C'est cet état morbide que j'appelle impuissance.

L'impuissance n'est donc pas pour moi, ainsi que l'ont définie mes devanciers, l'inaptitude permanente ou temporaire à la copulation, mais bien l'absence d'une ou de plusieurs des conditions du coït physiologique.

J'ai dit ailleurs quels étaient, chez l'homme, le nombre et la nature de ces conditions. — Je n'y reviendrai pas ici.

Chez la femme, elles sont au nombre de trois :

La première, désirs vénériens, est tout à la fois du domaine de l'âme et des sens ;

La seconde, réception dans le vagin de la verge de l'homme, appartient exclusivement au domaine organique ;

Et la troisième, plaisir, prend tout à la fois sa source et dans l'âme et dans les organes.

Je sais que cette dernière proposition ne sera pas acceptée sans conteste, car, ainsi que le dit je ne sais quel auteur, souvent un coït, commencé dans l'indifférence, se termine par la volupté. Mais je ne m'arrête pas davantage ici sur cette question, et je renvoie en son lieu et place la discussion de ce point en litige.

Quoi qu'il en soit, et pour simplifier encore plus la question, on peut dire que la femme a deux rôles dans le coït : l'un passif, constitué par la réception de la verge de l'homme dans son conduit vaginal ; l'autre actif, rempli par les désirs et le plaisir vénériens.

L'un et l'autre de ces deux rôles peuvent être suspendus, et alors, selon que l'incapacité porte sur la partie passive ou active de l'acte, on a deux genres d'impuissance chez la femme que je désignerai, pour ne pas tomber dans une technologie prétentieuse, par des expressions connues de tous, à savoir :

1° Impuissance par obstacles à l'intromission;

2° Impuissance par frigidité.

C'est à ce double point de vue que je traiterai l'impuissance chez la femme.

DIVISION PREMIÈRE

IMPUISSANCE PAR OBSTACLES A L'INTROMISSION

Les obstacles qui peuvent s'opposer à l'introduction de la verge dans le vagin sont nombreux et variés quant à leur nature et à leur siége; je me trouve donc, en raison même de cette diversité, dans un grand embarras pour la marche que je dois suivre dans leur exposition.

Quant à leur nature, ces obstacles sont d'abord congénitaux ou acquis; en second lieu, ils sont constitués tantôt par l'adhérence des parois du canal vaginal, et tantôt par la présence dans ce conduit d'un corps étranger, d'une tumeur, d'excroissances ou de la matrice déplacée de sa position normale.

Quant à leur siége, les obstacles se trouvent tantôt à la vulve, aux grandes ou aux petites lèvres, au clitoris, etc., et tantôt dans un point quelconque du vagin.

Dois-je poser les jalons de ma route en prenant pour points de repère les signes tirés de la nature des obstacles, c'est-à-dire suivre un ordre pathologique, ou, m'appuyant sur les données anatomiques, dois-je successivement décrire les affections de la vulve et celles du vagin?

L'une et l'autre de ces méthodes ont des avantages et des inconvénients : la première, si elle exige des divisions nombreuses, évite des répétitions et des renvois toujours fastidieux; et la seconde, si elle engage par sa simplicité, force sans cesse l'écrivain à revenir sur les mêmes états morbides, car ces états appartiennent, pour la plupart, à la pathologie générale bien plus qu'à la pathologie spéciale de l'organe. — Ces raisons militent beaucoup en faveur de l'ordre pathologique; j'ai d'ailleurs, pour me faire excuser la préférence que je lui donne, la convenance, sinon la nécessité, d'harmoniser cette partie de mon travail avec la première où les divisions se tirent de la nature même de l'impuissance.

Cependant, pour que la thérapeutique ne se perde pas dans le vague et repose toujours sur une donnée certaine, j'aurai constamment le soin d'indiquer le siége précis de l'affection, de telle sorte que je profiterai des avantages de l'ordre anatomique, sans en avoir les inconvénients.

CHAPITRE PREMIER

VICES DE CONFORMATION DES ORGANES EXTERNES DE LA GÉNÉRATION

A. — *Anomalies de la vulve.*

Je comprends sous le nom de vulve : 1° l'ouverture inférieure du canal vaginal ; 2° les grandes et petites lèvres ; 3° le clitoris. — Je laisse à dessein, comme ne rentrant pas dans mon sujet, le méat urinaire qui s'ouvre, comme on le sait, au milieu des nymphes.

J'examinerai séparément les vices de conformation des divers organes qui composent la vulve ; mais je dois, avant d'aller plus loin, signaler une anomalie excessivement rare, et qui s'accompagne, lorsqu'elle existe, de malconformations très-graves des organes internes de la génération ; je veux parler de l'absence complète de la vulve. Les annales de la science offrent très-peu d'exemples de ce vice de conformation, dans lequel n'existent des traces ni des grandes ni des petites lèvres, ni du clitoris, ni de l'ouverture vulvaire, et dans lequel cette partie présente une surface unie, sans poils, et comme la continuation de l'abdomen.

Il suffit d'indiquer, sans s'y arrêter davantage, l'existence possible de cette anomalie, car, en de pareilles circonstances, la médecine est désarmée et l'abstention est la seule ressource de notre art.

1° *Anomalies de l'ouverture vulvaire.* — Ces anomalies consistent surtout dans l'oblitération complète ou dans un simple rétrécissement de l'ouverture; mais au point de vue où nous sommes placé, il importe peu que l'occlusion soit entière ou partielle, pourvu qu'elle soit suffisante pour empêcher l'introduction de la verge dans le vagin.

Sans doute, sous le rapport de la santé générale dépendant de la rétention *mécanique* des règles, si je puis ainsi dire, la distinction à faire entre ces deux états pathologiques est importante; car si le simple rétrécissement qui permet au sang cataménial de s'écouler au dehors, ne réclame pas impérieusement l'intervention de l'art, il n'en est pas de même de l'oblitération complète qui peut mettre en danger les jours de la malade, mais qui, dans tous les cas, s'accompagne de symptômes étranges et toujours douloureux.

Je ne ferai de l'occlusion complète et du rétrécissement de l'ouverture vulvaire qu'une seule anomalie, parce que, à notre point de vue, les conséquences amenées par chacun de ces deux états sont identiques, c'est-à-dire que l'un et l'autre s'opposent à l'entier et facile accomplissement de la copulation.

L'occlusion de l'orifice vulvaire peut dépendre ou des parties dures ou des parties molles.

Dans le premier cas, elle s'accompagne toujours d'une vicieuse conformation du bassin, caractérisée surtout par une dépression considérable du pubis. Quelquefois le bassin est bien conformé, et ce sont des exostoses qui obstruent l'entrée du conduit vaginal; mais comme j'aurai plus loin l'occasion de parler des exostoses accidentelles, je reviendrai, à leur sujet, sur les exostoses congénitales. Quant aux vices de conformation du bassin, il faut se résigner à ne rien faire, le mal est au-dessus des ressources de notre art.

L'occlusion de la vulve par les parties molles a son siége, tantôt aux lèvres génitales, tantôt aux parois mêmes de l'orifice vulvaire, et tantôt à la membrane hymen.

Je vais rapidement examiner chacune de ces variétés.

Lorsque l'occlusion, qu'elle soit complète ou incomplète, dépend des lèvres génitales, leur adhérence peut être médiate ou immédiate.

La première de ces variétés n'est pas signalée par les auteurs; cependant, quoique infiniment plus rare que l'adhérence immédiate, elle se rencontre quelquefois, et, pour mon compte, j'en pourrais citer un ou deux exemples. Dans ces cas, il existe entre les deux petites lèvres une membrane plus ou moins résistante qu'il ne faut pas confondre avec l'hymen, car on retrouve celui-ci, quand il existe, au fond de la vulve, après la déchirure de la première membrane.

La membrane supplémentaire n'a ordinairement que quelques lignes d'étendue, est plus ou moins épaisse, et occupe tantôt la totalité et tantôt quelques points seulement de l'ouverture vulvaire. Il est toujours facile de la reconnaître soit à l'espace qu'elle laisse entre les deux petites lèvres, et qui permet de glisser entre elles le doigt ou une sonde cannelée, soit à la résistance moins grande qu'elle oppose à la pression.

Quand l'adhérence des petites lèvres se fait d'une manière immédiate, leurs parois, ainsi que le dit Amussat, sont collées ou soudées, comme chez les jeunes garçons dont le prépuce est adhérent au gland.

Mais quel que soit le mode suivant lequel l'adhérence s'établisse, il est d'une saine pratique d'opérer de bonne heure le débridement; cependant lorsque le canal de l'urèthre ne participe pas à l'oblitération, le chirurgien, qui a par devers lui un temps assez long, peut attendre l'époque qu'il croit la plus convenable, quoique les faits cités par Amussat ne laissent aucun doute sur le succès de l'opération pratiquée de bonne heure, puisqu'il a pu déchirer les adhérences pendant le sommeil de l'enfant, et sans que celle-ci s'aperçût même de la présence du chirurgien.

Amussat est d'avis de proscrire le bistouri de ces sortes d'opération, surtout chez les très-jeunes filles. Il suffit, selon lui, d'opérer des tractions pour décoller les membranes muqueuses, et il dit avoir employé deux fois ce procédé avec un entier succès (1).

Quand on songe à l'analogie qu'Amussat établit lui-même entre les adhérences des grandes lèvres et celles du gland et du prépuce, on se demande, si dans les deux faits qu'il cite dans son mémoire et auxquels je viens de faire allusion, ce praticien n'aurait pas eu affaire à des adhérences médiates, auxquels cas la membrane supplémentaire se déchire en effet très-facilement, et d'autant mieux que l'obstacle est moins ancien.

Ce sont tout à la fois les termes de la comparaison d'Amussat et son procédé opératoire qui m'ont conduit, quand une occlusion vulvaire se présentait à mon observation, à y regarder de plus près, et finalement à admettre l'adhérence médiate.

Dans ce dernier cas, en effet, il suffit d'opérer des tractions pour obtenir la désunion ; mais si l'adhérence est immédiate, si les deux muqueuses sont collées ensemble, à la manière du gland et du prépuce, les tractions non-seulement sont insuffisantes, mais encore elles peuvent devenir dangereuses par les déchirures qu'elles sont susceptibles de déterminer aux lèvres. Il faut alors recourir à l'instrument tranchant.

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(1) Amussat, *Observation sur une opération de vagin artificiel*, lue à l'Académie des sciences le 2 novembre 1835, p. 28.

Quand l'occlusion est incomplète, l'opération est simple : il suffit d'agrandir une ouverture qui existe déjà. C'est un débridement que l'on pratique avec un bistouri conduit par la sonde cannelée, et dirigé quelquefois en haut, le plus souvent en bas.

Quand l'occlusion est complète, l'opération, sans être aussi simple que la précédente, n'offre pas de très-grandes difficultés. On incise d'abord, couche par couche, les tissus qui se trouvent sur la ligne médiane, en suivant la direction du raphé périnéal, et quand un point de l'occlusion est ouvert, on termine comme si l'on avait affaire à une occlusion incomplète, et de la même façon qu'il a été indiqué tout à l'heure.

Il est inutile, ne faisant point ici un traité de chirurgie, de recommander de prévenir une nouvelle occlusion, déterminée cette fois par la cicatrisation des tissus divisés, en introduisant entre les lèvres de la plaie, soit une canule, soit une mèche de charpie, soit tout autre corps étranger.

Quand l'occlusion de la vulve a son siége sur les parois mêmes de l'ouverture de ce canal, la conduite à tenir est identique avec celle que je viens d'indiquer. Le débridement n'offre pas de particularité à noter, d'autant mieux que cette variété d'occlusion est rarement indépendante de l'adhérence des lèvres.

L'hymen peut être également la cause de cette occlusion ; son imperforation est tantôt complète, et alors la copulation et l'excrétion cataméniale sont impossibles ; tantôt elle est incomplète et forme simplement obstacle, par la résistance de son tissu, à l'accomplissement de l'acte copulateur. — Il est bien entendu qu'il ne s'agit point ici de fécondation, car la science possède plus d'un exemple de grossesse, avec un hymen dont l'ouverture presque imperceptible laissait à peine passer un stylet.

Quand l'ouverture de l'hymen est incapable de permettre l'introduction de la verge, et que les premières approches de l'homme n'ont pu l'agrandir d'une manière notable, il suffit d'un coup de ciseaux ou de bistouri, dirigé soit en haut, soit en bas, mais dans le sens de la ligne médiane, pour ouvrir un passage convenable et rendre ainsi possible la copulation.

Quand l'hymen est imperforé, au lieu d'une incision longitudinale, il convient mieux de faire une ouverture en T, dont les lambeaux sont ensuite taillés, afin que par leur longueur ils ne rendent pas le coït, sinon réalisable, du moins douloureux pour les deux conjoints. On peut même, dans les cas d'imperforation incomplète, donner cette forme à l'ouverture artificielle, surtout lorsqu'on a à craindre que les lambeaux de l'hymen incisé ne se réunissent pendant le travail de la cicatrisation, ou ne restent durs et pendants, comme dans l'imperforation complète.

2° *Anomalies des lèvres.* — Je ne reviendrai pas ici sur l'adhérence des grandes et des petites lèvres entre elles, dont je viens de parler; je ne m'arrêterai pas davantage à l'absence ou à la petitesse de ces organes, parce que ces anomalies n'empêchent point la copulation, et je n'indiquerai, comme vice de conformation susceptible de s'opposer au rapprochement sexuel, que le volume, quelquefois énorme, que présentent les petites lèvres.

Ce n'est guère que dans les pays chauds, et surtout en Afrique, que les petites lèvres acquièrent ce développement considérable; dans ces contrées, l'excision de ces parties constitue une règle d'hygiène comparable à la circoncision, et, de même que cette dernière opération est sortie du domaine purement chirurgical, l'ablation d'une portion des petites lèvres est la spécialité de certains hommes étrangers à notre art, et qui s'en vont par les rues en criant : *Quelle est celle qui veut être coupée* (1)?

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(1) Amb. Paré, *Œuvres complètes*, t. III, p. 19, édit. de J.-F. Malgaigne. Paris, 1841

Cet usage a disparu des pays où s'est établie la civilisation européenne, mais le fait anatomique qui lui avait donné naissance existe toujours, ainsi que l'a constaté M. le docteur Duchesne, en visitant les prostituées mauresques de la ville d'Alger (1).

On rencontre rarement une semblable anomalie dans nos climats tempérés, et si quelques femmes présentent un volume des nymphes plus considérable que dans l'état normal, ce volume n'atteint jamais des proportions incompatibles avec le coït.

Cependant, si une pareille conformation existait, il serait facile de la faire disparaître en pratiquant l'excision des petites lèvres, qui s'exécute avec de grands ciseaux ; l'hémorrhagie qui en résulte n'exige, pour s'arrêter, que l'emploi de compresses d'eau froide ou de glace, et l'inflammation s'éteint d'elle-même par quelques jours de repos au lit.

3° *Anomalies du clitoris.* — Ces anomalies sont de deux sortes : ou cet organe manque complétement, ou bien il acquiert des dimensions assez considérables pour lui donner les apparences d'une verge véritable.

Dans le premier cas, l'introduction du membre viril dans le vagin n'en est pas empêchée; seulement, les plaisirs du coït dévolus à la femme, s'ils ne sont pas entièrement abolis, en sont profondément atteints. Le clitoris, en effet, n'est pas le siége *exclusif* de la volupté chez la femme, comme le gland chez l'homme; l'entrée du vagin est garnie de follicules sensitifs qui contribuent à cette volupté. Mais cependant le clitoris a, dans le développement des sensations cyniques, une supériorité incontestable, ainsi que je le ferai voir plus loin, alors que j'examinerai les circonstances auxquelles doit être rapportée la frigidité.

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(1) Duchesne, *De la prostitution dans la ville d'Alger depuis la conquête*. Paris, 1853, p. 124.

En cette place, je ne veux m'occuper que de la copulation proprement dite, c'est-à-dire de cette partie de l'acte caractérisée par l'introduction de la verge dans le vagin, et je dois, par conséquent, remettre à plus tard les considérations que je me propose de présenter sur l'absence et la petitesse, congénitales ou acquises, du clitoris.

Je ne parlerai ici que de son volume extraordinaire.

Quelques auteurs portent ce volume à des proportions exorbitantes : Columbus cite un clitoris dont la longueur égalait celle du petit doigt; Haller donne à un autre 7 pouces, et l'on va même jusqu'à l'égaler au volume de la verge, que dis-je? on ne recule pas jusqu'à lui accorder 12 pouces!

Ces proportions sont évidemment exagérées, ou du moins les exemples de semblables clitoris sont excessivement rares; les cas les plus ordinaires sont des clitoris de la longueur du pouce, tel que celui observé et décrit par Moreau (1).

Les femmes qui présentent un pareil vice de conformation ont été accusées, de tout temps, d'un penchant très-prononcé, non-seulement pour la luxure, mais encore pour la *tribadie*, ce vice honteux qui fait rechercher aux femmes les individus de leur sexe : « Les doctes africains, dit Ambroise Paré, appellent telles femmes *sahacat*, qui vaut en latin *fricatrices*, parce qu'elles se frottent l'une l'autre par plaisir; et véritablement elles sont atteintes de ce méchant vice d'user charnellement les unes avec les autres (2). »

Les observations de Parent-Duchâtelet ne permettent plus d'ajouter foi à ces croyances populaires. Cet auteur, dont la véracité est au-dessus de tout soupçon, assure que le développement du clitoris est rare chez les prostituées; que ce développement, quand il existe, ne coïncide pas chez elles avec des penchants contre nature, et que les tribades n'ont, dans la conformation de leurs organes sexuels, rien qui les distingue de ceux des autres femmes (1). S'il m'était permis de me citer après Parent-Duchâtelet, je dirais que les hasards de la vie ou les nécessités de ma profession m'ayant fait connaître plusieurs tribades, je les ai très-attentivement examinées et n'ai signalé chez elles rien d'anormal dans les parties externes de la génération. Seulement, elles étaient à peu près toutes remarquables par une absence à peu près complète des seins et par un penchant très-prononcé pour l'équitation.

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(1) Moreau, *Traité pratique des accouchements*. Paris, 1838, t. I, p 105.

(2) Ambroise Paré, *loc. cit.*, p. 18.

Assez généralement les tribades éprouvent de l'éloignement pour le commerce des hommes, et sont frappées à leur endroit d'une sorte de frigidité qui légitime les courtes considérations que je viens de présenter et sur lesquelles j'aurai à revenir plus longuement ailleurs.

Il faut que le clitoris atteigne des dimensions assez considérables pour s'opposer à la copulation, et si l'excision n'en était pratiquée que dans ce but, elle serait à coup sûr, dans nos contrées, une des opérations les plus rares de la chirurgie. Mais il est incontestable qu'un clitoris volumineux, exposé dans la marche à un frottement continuel de la part des vêtements, ou par toute autre cause, entretient un orgasme qui peut conduire la femme à la nymphomanie et à toutes les fâcheuses conséquences qui en découlent.

Quoi qu'il en soit, et quel que puisse être le but que l'on se propose en excisant le clitoris, l'opération est très-simple. Si l'organe est volumineux, on le prend avec la main gauche et on le tranche d'un coup de bistouri, et s'il est moins fort, on le saisit avec une pince, et on en opère la section, soit avec un bistouri, soit avec des ciseaux. — Il ne convient pas, dans l'intention de prévenir une hémorrhagie que l'on peut arrêter avec la cautérisation, de lier l'organe, et d'en déterminer ainsi la mortification et la chute. Ce procédé, outre qu'il est long et douloureux, expose à des accidents de gangrène qui ne sont pas à craindre avec l'emploi du bistouri et des ciseaux. Si une menace d'hémorrhagie existait réellement, et si le clitoris était assez volumineux, on pourrait lier ou tordre les artérioles qui alimentent cet organe. Mais, je le répète, la glace, et au besoin la cautérisation, répondent, dans la presque totalité des cas, à toutes les indications.

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(1) Parent Duchâtelet, *De la prostitution dans la ville de Paris*. Paris, t. I, p. 220 et suiv.

B. — *Anomalies du vagin.*

Les anomalies du vagin sont nombreuses et fort diverses; toutes ne constituent pas une impossibilité radicale à la copulation, mais celles qui la permettent encore la rendent ou douloureuse ou difficile.

Pour mettre quelque ordre dans l'examen des vices de conformation de cet organe, je les classerai sous les cinq chefs principaux suivants : 1° absence du vagin; 2° rétrécissements; 3° obturation; 4° bifidité; 5° communication avec les organes voisins.

Quelques-uns de ces vices de conformation s'opposent à la fécondation, d'autres, au contraire, permettent encore cet acte, mais apportent plus ou moins de difficultés à la sortie du produit de la conception.

On me permettra, pour ne pas scinder cet article intéressant, d'anticiper sur la partie de cet ouvrage consacrée à la stérilité de la femme, et d'indiquer à chacune des anomalies que je vais examiner les particularités qui s'y rattachent.

Absence du vagin. — Si on se rappelle que le vagin est formé, dans sa partie utérine, par le creusement en canal des conduits de Muller, et dans sa partie vulvaire, par la résorption du feuillet tégumentaire et la perforation de la partie périnéale du cloaque, on comprendra que l'absence du vagin peut présenter, et présente en effet les trois variétés suivantes :

1° Absence complète de l'utérus et du vagin, avec existence normale des parties génitales externes ;

2° Occlusion et absence de la partie inférieure du vagin, avec intégrité de l'utérus et parfois aussi de la portion utérine du vagin ;

3° Terminaison du vagin en cul-de-sac à une profondeur plus ou moins grande, avec absence ou atrophie de l'utérus.

Dans cette dernière variété comme dans la première, les annexes de la matrice peuvent également manquer partiellement ou d'une manière complète.

Lorsque l'utérus manque ou est atrophié, les règles font défaut, et il ne se forme pas une accumulation de sang qui peut mettre en danger la vie de la malade et qui, dans tous les cas, est la cause de souffrances périodiques. Dans ces circonstances, alors que la procréation est impossible et qu'il n'y a ni douleurs à soulager, ni existence à sauvegarder, le chirurgien doit-il tenter une opération dans le seul but de facilité la copulation ?

Évidemment aucun chirurgien honnête ne se prêtera à des désirs de débauche ; mais il peut y avoir des occasions où l'humanité lui fait un devoir de conserver au moins à de malheureuses femmes le titre d'épouse, alors qu'elles ne peuvent aspirer à celui de mère. Sous ce rapport M. le professeur Le Fort donne de sages conseils qu'il importe de livrer aux méditations du praticien : « Il est des circonstances où une opération de complaisance est presque une opération de nécessité, et nous connaissons des cas où le chirurgien a dû se rendre aux désirs de sa malade qui, tout en sachant bien ne pouvoir pas devenir mère, voulait au moins rester épouse, ce qu'elle n'avait pu encore devenir dans l'acception matérielle du mot ;

nous connaissons même un cas, où un chirurgien des plus expérimentés a du céder aux prières et aux larmes de sa malade, créer un vagin artificiel, en ouvrant le canal de l'urèthre jusqu'au col vésical exclusivement, de telle sorte que ce vagin artificiel n'avait pour aboutissant que la vessie.

» L'humanité dans ses défaillances, exige quelquefois, à l'insu de celui qui les provoque, des résolutions héroïques de la part d'une épouse. Le chirurgien doit-il se faire le sauveur ou le complice de la malade qui l'implore? Il n'y a pas ici de règles à poser, c'est dans chaque cas particulier une question de circonstance que le chirurgien doit juger dans sa conscience (1). »

Ainsi donc, si la matrice manque ou est atrophiée, si les règles font défaut, et si la santé générale est bonne, tout se réunit pour s'opposer à une opération ; le chirurgien, sauf les cas où l'humanité lui commande d'agir, ne doit jamais compromettre son art pour faciliter un coït dont le but final, la fécondation, ne peut être atteint.

Quand la matrice existe, mais lorsque les menstrues n'ont donné aucun signe de leur présence et que la santé générale n'est pas altérée, la prudence et l'honneur de l'art exigent une sage réserve; la temporisation me semble alors de toute rigueur.

Enfin quand l'utérus existe, quand on peut en constater la présence, soit par le toucher rectal, soit par la palpation abdominale, et quand les règles, retenues dans son intérieur, l'ont forcé à un développement anormal, il est de toute évidence, qu'à moins de contre-indications trop formelles, l'opération doit être tentée.

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(1) Le Fort, *Des vices de conformation de l'utérus et du vagin et des moyens d'y remédier*, thèse de concours pour l'agrégation. Paris, 1863, p. 144.

Mais après avoir bien limité les cas dans lesquels l'opération est praticable, les chirurgiens se sont demandé à quelle époque l'opération devait être entreprise. Il me semble qu'une bien grande incertitude ne peut régner à cet égard. Si le chirurgien, averti de bonne heure, opère avant l'entier développement des organes, il double les chances malheureuses de l'opération, en augmentant les facilités d'intéresser le rectum ou la vessie, et en se privant, comme point de repère pour conduire le bistouri, de la tumeur sanguine produite par les règles accumulées dans la matrice.

Cependant, s'il attend trop tard, c'est-à-dire s'il attend que plusieurs mois se soient écoulés depuis l'établissement des menstrues, l'opération, il est vrai, en sera peut être plus facile, mais les accidents consécutifs seront à coup sûr et plus nombreux et plus formidables.

Il convient donc d'attendre l'approche des premières règles, mais il importe aussi de ne pas temporiser au point de permettre leur accumulation dans la matrice.

Une fois l'opération résolue, le chirurgien, avant de s'armer du bistouri, doit bien se convaincre qu'il va porter l'instrument tranchant entre deux organes importants, très-rapprochés, et dont la lésion est toujours grave; on a vu la mort résulter de la blessure de la vessie, ou tout au moins s'établir des fistules très-difficiles à guérir.

Pour se mettre en garde contre de pareils accidents, les précautions les plus minutieuses sont indispensables : il faut d'abord introduire une sonde dans la vessie, et ensuite l'index de la main gauche dans le rectum, avec lequel on va à la recherche de la sonde à travers les tissus dont on peut ainsi mesurer l'épaisseur; de cette façon, on s'assure si l'oblitération du vagin est complète, ou si ce canal forme le cul-de-sac qui reçoit le col utérin.

Dans ce cas, le cul-de-sac offre une résistance assez considérable par suite de l'accumulation du sang menstruel qui s'y est faite.

Quand toutes ces précautions ont été prises, et quand la vessie est vidée, l'opérateur confie la sonde à un aide, et laisse son index gauche dans le rectum, afin d'avoir un guide dans la voie qu'il va tracer.

A quelques lignes au-dessous du méat urinaire dont la position lui est indiquée par la sonde, le chirurgien pratique une incision dans le sens des lèvres génitales, et pénètre plus avant dans la direction du vagin, selon l'axe du petit bassin, et va à la recherche du col de l'utérus.

Cette partie de l'opération, véritable dissection, est faite lentement et avec précaution; on comprend la prudence qui doit présider à chaque coup de bistouri, afin d'éviter les deux organes entre lesquels on chemine, et pour ne pas intéresser le col de l'utérus lui-même. La main de l'opérateur, quittant le bistouri, doit souvent explorer la plaie et s'assurer de la position de la sonde et de l'index resté dans le rectum. Si la nature des adhérences le permet, il vaut mieux déchirer avec le doigt le tissu cellulaire qui unit les parois vaginales, que de le disséquer avec le bistouri, car quelque attention que l'on apporte, on n'est jamais sûr de ne pas toucher la vessie ou le rectum.

Enfin, si le cul-de-sac existe, et si l'on a constaté l'existence d'une tumeur sanguine, il convient de ne pas ouvrir cette dernière par une large incision qui laisserait sortir tout à coup tout le sang accumulé. Vidal (de Cassis) propose de faire une petite ponction avec un de ces trocarts à robinet ou à soupape, qu'on a imaginés pour vider les empyèmes sans permettre l'introduction de l'air dans les cavités pleurales. Après l'écoulement de tout le liquide, on fait usage de corps dilatants, pour agrandir le canal que l'on a creusé, et lui permettre de compléter ses parois.

Comme on le doit comprendre, le rétablissement du vagin est une opération excessivement grave, à ce point, que Boyer, malgré les dangers que fait courir à la femme la rétention du sang menstruel, conseille de s'abstenir. « J'ai vu pratiquer trois fois cette opération, dit Vidal (de Cassis), et trois fois la mort en a été la conséquence plus ou moins prompte. Les malades ont succombé à une espèce de fièvre qui avait la plus grande analogie avec la fièvre de résorption. Il paraît qu'après l'évacuation prompte de l'humeur qui était depuis longtemps accumulée dans la matrice, cet organe ne revient pas assez promptement sur lui-même ; l'air pénètre dans sa cavité ; de là des accidents qui ont une grande analogie avec ceux qui succèdent à l'inertie de la matrice après l'écoulement, et avec ce qui arrive à la suite de l'ouverture de certains abcès symptomatiques à larges poches (1). »

L'accident signalé par Vidal, s'il n'est complétement prévenu, est au moins assez considérablement affaibli par la modification que cet auteur lui-même propose, pour qu'il ne soit pas une contre-indication formelle à l'opération.

D'ailleurs, à côté des cas malheureux notés par les auteurs, la chirurgie compte des succès qui peuvent au besoin engager à l'opération.

Mais si ces considérations étaient insuffisantes pour lever tous les scrupules, on pourrait recourir au procédé en plusieurs temps qu'employa Amussat dans l'observation dont j'ai déjà parlé.

Voici ce procédé tel que le décrit Malgaigne : « Une jeune fille de quinze ans et demi avait le vagin oblitéré au moins dans les deux tiers de son étendue ; au-dessus, les règles accumulées formaient une tumeur fluctuante. La malade ayant été préparée par un bain, un lavement et un cataplasme sur la vulve, le chirurgien, armé d'une grosse sonde droite, en appuya l'extrémité au-dessous de l'urèthre, là où l'orifice du vagin aurait dû se trouver, et poussa dans la direction du vagin, de manière à refouler la muqueuse et à produire un léger enfoncement. Il répéta cette manœuvre avec le petit doigt, après avoir mis au préalable un autre doigt dans le rectum pour servir de conducteur; la pression fut douloureuse, mais déjà efficace, et l'impression du petit doigt resta. Pour mieux atteindre son but, il attira alors le périnée en arrière, en le pinçant avec un doigt dans l'anus et le pouce dans la vulve, tandis que, d'autre part, il cherchait à attirer en haut l'urèthre pour l'écarter du rectum et laisser plus d'espace entre eux. Il resta un trou sans déchirure ni effusion de sang. Pour conserver cette dilatation, on plaça dans ce petit enfoncement, en forme de doigt de gant, une éponge préparée. Trois jours après, on répéta l'introduction et l'impulsion du doigt; on introduisit deux doigts pour opérer une distension plus forte; il y eut en effet un véritable éraillement dans la muqueuse avec effusion de sang. On remit l'éponge préparée. Après cinq autres tentatives ainsi faites à un ou deux jours d'intervalle, on avait créé un conduit artificiel de près de 6 centimètres de longueur : alors, au fond de ce conduit, on dirigea sur l'indicateur un trocart qu'on plongea dans la tumeur. Puis on remplaça le trocart par le bistouri garni de linge dans les cinq sixièmes de sa lame; il n'y avait plus qu'une épaisseur de 12 à 15 millimètres à traverser. Il sortit de 350 à 380 grammes d'un sang gluant et noirâtre. On introduisit dans ce vagin nouveau une grosse canule en gomme élastique; et après divers accidents la guérison s'acheva, et elle dure déjà depuis plusieurs années. »

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(1) Vidal (de Cassis), *Traité de pathologie externe*, t. V, chap. IV, art. III, 4^e édit. Paris, 1855.

A cet exposé de la conduite d'Amussat, Malgaigne ajoute son expérience personnelle : « J'ai eu à faire, poursuit-il, une opération analogue sur une femme qui avait eu le vagin oblitéré à la suite d'un accouchement. Je commençai par diviser la cicatrice extérieure qui arrivait presque au niveau de la vulve; puis, après la première émission, je déchirai les parties avec l'indicateur poussé en avant, en élargissant la voie de droite à gauche jusqu'à ce qu'enfin je tombai dans une petite cavité où je reconnus le col utérin. Il fallut maintenir le vagin dilaté pendant plus d'une année avec des tentes de gentiane; mais enfin il persista et se prêta parfaitement aux relations conjugales. La femme n'est pas devenue enceinte jusqu'à présent (1). »

Nous venons de voir trois procédés mis en usage pour la création de vagins artificiels : 1° le bistouri, 2° le décollement, 3° l'alliance du bistouri et des doigts.

Ce dernier procédé, procédé mixte, est le plus sûr des trois et est aussi celui qui a donné les meilleurs résultats.

Mais qu'on ne se fasse pas de trop grandes illusions ; quand on lit toutes les observations publiées, on acquiert la triste certitude que les résultats obtenus avec tant de peine ne sont pas toujours durables, et que l'opération doit être recommencée au bout d'un temps plus ou moins court, à moins que les malades ne continuent longtemps l'emploi des moyens de dilatation.

Atrésie ou étroitesse du vagin. — L'altération de la capacité du vagin ne porte pas seulement sur son diamètre transverse ; toujours ce canal oblitéré ou rétréci a une longueur bien inférieure à celle qu'il présente dans l'état normal ; les faits observés et rapportés par Baillie (2), Morand (3), Caillot (1), Chaussier (2) ne laissent aucun doute à cet égard; j'ai constaté moi-même cette diminution dans la longueur du vagin chez une jeune fille de dix-neuf ans, que l'étroitesse de cet organe empêchait de se livrer à la prostitution.

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(1) Malgaigne, *Manuel de médecine opératoire*, 6e édit., p. 702-703. Paris, 1854.

(2) Baillie, *Anatomie pathologique*.

(3) Morand, *Opuscules de chirurgie*. Paris, 1768.

L'étroitesse du vagin est quelquefois limitée sur un point; mais le plus ordinairement elle occupe le canal tout entier. Nysten a inséré, dans le *Journal de médecine* de Corvisart et de Leroux, une observation sur laquelle je reviendrai ailleurs, et de laquelle il résulte que l'orifice du vagin présentait seul un resserrement énorme.

Mais, ainsi que je viens de le dire, c'est le plus ordinairement sur toute la longueur du canal que porte l'étroitesse; les faits de ce genre ne sont pas très-rares; je n'en rapporterai que deux exemples remarquables, le premier par sa disparition naturelle, et le second par le traitement mis en usage et dont le succès doit engager à imiter l'auteur en de semblables circonstances.

Le sujet de la première observation, consignée dans les *Mémoires de l'Académie des sciences de Paris*, est une jeune personne dont le vagin pouvait à peine admettre une plume à écrire. A chaque époque menstruelle, elle éprouvait dans la matrice une tension douloureuse très-forte, et les règles coulaient avec une très-grande difficulté. Mariée à l'âge de seize ans à un homme jeune et vigoureux, elle ne put recevoir ses embrassements; et, visitée par des médecins, elle fut déclarée par eux impropre à la copulation. Cependant, après onze années d'impuisssance et de stérilité, et sans que le vagin eût acquis une capacité plus grande, cette femme devint enceinte; son état, on le comprend, inspira les plus vives craintes, car on prévoyait que l'accouchement serait impossible par les voies naturelles. Mais, vers le cinquième mois de la grossesse, le vagin commença à se dilater, et sur la fin, il avait acquis les dimensions convenables pour permettre la sortie de l'enfant (1).

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(1) Caillot, *Mémoires de la Société médicale d'émulation.*

(2) Chaussier, *Bulletin de la Faculté de médecine de Paris.*

Ce fait est excessivement remarquable par la terminaison qu'il a présentée; il est peut-être le seul dans la science, et en face d'une exception aussi rare il y aurait folie à s'abstenir et à compter sur la nature.

Dans les cas de ce genre, il faut que l'art intervienne, et je vais dire, en racontant le second fait que j'ai choisi, de quelle manière se doit faire cette intervention.

Le vagin de la femme en question était à ce point resserré dans toute son étendue qu'il pouvait à peine admettre le tuyau d'une plume à écrire. Mariée à un homme dont la force virile n'était pas douteuse, cette infortunée ne put lui faire goûter les plaisirs de la couche nuptiale, et elle allait voir son mariage déclaré nul, quand Benevoli consulté mit en usage la médication suivante : il employa d'abord les fomentations émollientes ; ensuite il introduisit un pessaire de racine de gentiane dans toute la longueur du canal, comme s'il se fût agi d'agrandir une fistule, et il augmenta progressivement le volume de ce pessaire jusqu'à ce qu'il pût le remplacer par la moelle d'une tige de maïs, et arriver ensuite à l'éponge préparée. Ces diverses substances, en s'imprégnant des mucosités vaginales, se gonflèrent, dilatèrent progressivement le vagin, et le rendirent apte à remplir ses fonctions (2).

Il suffit d'indiquer cette médication pour que tout le monde en comprenne les avantages, et qu'en semblable occurrence on suive l'ingénieuse et sage conduite de Benevoli.

Dans un cas pareil, Demarquay se servit d'un cylindre creux, construit en buis, divisé en deux valves, comme un spéculum, et enveloppé d'une chemise de caoutchouc vulcanisé; quand le cylindre fut engagé dans le rétrécissement, on écarta les valves au moyen d'un mandrin dont on augmenta la grosseur à mesure que la dilatation devenait plus considérable, et la malade guérit au bout d'un temps assez court.

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(1) *Mémoires de l'Académie des sciences de Paris.*

(2) Van Swieten, *Comment. in aphorism. Boerhaave*, § 1290, et Boyer, *Maladies chirurgicales*, 1re édit., t. X, p. 340

Obturation du vagin. — Cette anomalie est constituée par la présence d'une membrane plus ou moins résistante et placée plus ou moins haut dans l'excavation vaginale. C'est une véritable cloison qui coupe le vagin en deux : une partie supérieure et une partie inférieure. Nous verrons tout à l'heure, dans les cas de bifidité, cette cloison se diriger dans le sens vertical, et diviser le vagin en deux portions latérales.

La cloison obturatrice dont j'ai à m'occuper ici est tantôt incomplète et tantôt complète. La distinction, on le comprend, est de la plus haute importance sous le rapport de la stérilité.

Une des observations les plus remarquables de cloison incomplète que possède la science est celle que rapporte J.-L. Petit.

Le sujet est une jeune femme que notre chirurgien avait examinée alors qu'elle était encore fille, dans le but de constater les dimensions du bassin. Après avoir reconnu la bonne conformation de cette partie, J.-L. Petit se refusa de visiter les organes internes de la génération, ne voulant pas détruire les signes de la virginité.

La jeune fille s'étant mariée, et le motif allégué par le chirurgien n'existant plus, celui-ci reprit l'examen interrompu, et constata ce qui suit : « Je trouvai, dit-il, au-dessus de l'orifice du vagin, une tumeur de la grosseur d'un œuf, laquelle s'élargissait en montant; comme la malade ne souffrait point, je portai mon doigt aussi avant qu'il me fut possible, et, comme si j'avais percé une poche, il sortit en abondance du sang rouge et fluide, puis des caillots noirs, et en pressant tout l'espace qu'occupait la tumeur je la vidai tout entière; puis, portant mon doigt au-dessus, à droite et à gauche, je reconnus que cette poche avait la forme d'un *panier de pigeon*, ayant son fond en bas, et son ouverture, qui était fort grande, était en haut, de manière que le sang menstruel, au lieu de sortir, tombait dans cette poche et la remplissait au point qu'elle formait une tumeur qui bouchait tout le vagin. Tout ce que je viens de dire se passa sans douleur. Pour remédier à cet accident, quoique la membrane qui formait cette poche eût l'épaisseur d'un écu, je fus d'avis de la fendre dans presque toute sa longueur; et si l'on m'avait cru, cette dame ne serait pas morte.

» On consulta à mon insu différentes personnes, qui rejetèrent bien loin l'idée de cette opération, et en firent une description telle, que la mère, le gendre et la fille en furent effrayés.

» On conseilla un pessaire, qui, introduit et placé à propos, au commencement des règles, presserait la poche et la tiendrait appliquée contre le vagin, pour empêcher qu'elle ne se remplît, pendant que le sang coulerait librement par l'ouverture du pessaire. Cette idée fut suivie. La malade eut ses règles; le pessaire réussit parfaitement, et l'on crut la malade guérie. La dame devint grosse; la grossesse se passa sans incommodité; l'accouchement ne se passa pas de même; la poche en forme de panier de pigeon, à laquelle on ne songeait plus, et dont la sage-femme ne fut point prévenue, retarda longtemps l'accouchement, et s'étant enfin déchirée, on tira heureusement l'enfant, que l'on trouva mort; mais la tête avait été retenue si longtemps au passage que la poche, le vagin et la vessie, qui avaient été fort comprimés contre le pubis, tombèrent en gangrène; je fus appelé à ce désastre : le déchirement et la pourriture régnaient dans tout le vagin et la vessie, et la gangrène attaquait même l'urèthre, le clitoris, les nymphes et l'intérieur des grandes lèvres, etc. (1). »

Comme le voulait faire J.-L. Petit, qui se trouvait en présence d'une véritable valvule, l'excision de la cloison est la seule ressource que l'art mette à notre disposition.

Quelquefois, surtout quand l'obturateur n'est ni trop étendu ni trop épais, on peut se contenter de le fendre en deux, soit avec les ciseaux, soit avec le bistouri, et les lambeaux, en se rétractant, se perdent dans les plis du vagin et ne sont plus un obstacle à la copulation et à la sortie des règles.

Mais si la cloison est très-étendue, sans être cependant complète, et si elle est constituée par une membrane dure, épaisse, calleuse, il en faut faire l'extirpation entière, opération qui, grâce au spéculum, n'offre aucune difficulté.

Quand la cloison est complète, c'est-à-dire quand elle produit l'effet d'un diaphragme placé en travers du vagin, le diagnostic, surtout à l'âge où s'établissent les menstrues, ne peut s'égarer. Outre le sentiment de pesanteur que la malade éprouve du côté de la matrice, outre le développement de l'abdomen dû à l'accumulation du sang dans l'utérus, les règles, pressant sur la membrane qui forme la cloison, la refoulent en bas, et constituent ainsi une tumeur fluctuante que l'on aperçoit à l'entrée de la vulve quand l'obstacle est placé assez bas, mais que l'on reconnaît toujours en introduisant le doigt dans le vagin.

L'indication à remplir se devine.

Quelquefois le sang accumulé brise par son propre poids la membrane, et épargne ainsi au chirurgien un coup de bistouri ou de trocart.

Mais le plus ordinairement l'art est obligé d'intervenir et de donner issue au liquide, sauf à couper ensuite les lambeaux flottants dans le vagin.

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(1) J.-L Petit, *Œuvres complètes. — Traité des maladies chirurg.* Paris, 1844, p. 792, édit. de la *Bibliothèque chirurgicale.*

Les exemples d'obturation vaginale sont moins rares qu'on ne pense : Ambroise Paré, Ruysch, Fabrice de Hilden, Benevoli, J.-L. Petit en rapportent plusieurs, et l'on en rencontre un assez grand nombre dans les recueils et les journaux de médecine.

Bifidité du vagin. — Ainsi que je le disais plus haut, la cloison dont je viens de parler, au lieu d'être transversale, diaphragmatique, peut être longitudinale, c'est-à-dire dans le sens de l'axe du vagin, et partager ainsi ce canal en deux portions latérales. Cette cloison est tantôt incomplète et tantôt complète.

Elle est incomplète quand elle n'occupe pas toute la longueur du canal, qu'elle commence à un point plus ou moins éloigné de la vulve.

Elle est complète, au contraire, quand elle divise le vagin dans toute son étendue ; assez généralement alors, la matrice elle-même participe à cette anomalie, et présente une bifidité sur laquelle j'aurai à revenir plus tard. Dance a inséré, dans les *Archives de médecine*, une observation de ce genre, recueillie sur une femme morte à l'Hôtel-Dieu, et à laquelle je dois donner ici une place, pour mieux faire comprendre le vice de conformation dont il s'agit : « Une membrane continue, dit-il, divisait le vagin dans toute sa longueur, à partir du méat urinaire et de la commissure postérieure de la vulve jusqu'au milieu du col utérin. Cette cloison avait environ une demi-ligne d'épaisseur ; elle était ferme, résistante, tapissée de chaque côté par la membrane muqueuse vaginale, qui se continuait de part et d'autre sans interruption. Le col de la matrice ne formait point de saillie apparente dans la cavité de ce double vagin ; son extrémité inférieure était plutôt aplatie qu'arrondie ; à droite et à gauche de cette surface, on voyait deux simples trous de forme ronde, de la grandeur d'un petit tuyau de plume, n'étant point couronnés par deux lèvres, ne présentant point l'apparence de fente transversale comme dans l'état naturel. Ces trous aboutissaient isolément dans une loge correspondante de la matrice, dont la cavité était ainsi séparée en deux par un *septum* médian. Vers les angles supérieurs de cet organe existaient deux prolongements latéraux d'un pouce et demi à deux pouces de longueur, ayant le volume du doigt, une texture identique avec celle des parois utérines, dont ils étaient une continuation, une forme arrondie et conoïde, se terminant enfin par leur sommet en donnant naissance aux deux trompes. La longueur de ces derniers canaux était, à partir de ce point jusqu'à leurs pavillons, aussi grande que dans l'état naturel. Le corps de la matrice avait un très-petit volume; sa hauteur, jointe à celle du col, était seulement de deux pouces; sa texture ne différait point de celle d'une matrice ordinaire; elle ne paraissait point avoir été en aucun temps le siége de la fécondation. Les ovaires étaient petits et comme ratatinés, l'urèthre et le clitoris bien conformés (1). »

La bifidité, car, en définitive, c'est à ce point de vue qu'elle nous intéresse, peut-elle empêcher la copulation? Rigoureusement, elle ne constitue pas une impossibilité absolue, un obstacle infranchissable, mais elle est une gêne et une source non douteuse d'ennuis et de douleurs pour les deux conjoints. Une jeune femme, dont la bifidité du vagin était incomplète, pouvait se livrer à la copulation, il est vrai, mais avec de telles précautions qu'elle réclama mes soins pour être débarrassée de cette infirmité. La verge, en pénétrant dans le canal, heurtait quelquefois le bord inférieur de la cloison, qui était à peu près à deux travers de doigt de l'orifice vulvaire, et ce choc n'était pas sans douleur pour l'homme et surtout pour la femme; dans tous les cas, quel que fût le côté où se logeât la verge, la poche vaginale n'ayant plus que la moitié de sa capacité ordinaire, était distendue outre mesure, et cette distension faisait du coït un sujet constant de souffrances.

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(1) Dance, *Archives générales de médecine*, ann. 1829, t. XX, p. 538.

A ne considérer que l'acte copulateur, l'opportunité d'une opération ne saurait être douteuse; mais quand la bifidité du vagin se prolonge jusqu'au col de l'utérus et pénètre dans cet organe, il peut être utile de s'abstenir et de laisser subsister un obstacle au coït, afin de prévenir les accidents ultérieurs que déterminerait à coup sûr une grossesse; en effet, le produit de la conception, en se développant dans une cavité trop étroite, s'il ne succombait pas lui-même, pourrait déterminer la rupture de la poche utérine dans laquelle il serait contenu, sans parler des douleurs nombreuses qui accompagneraient cette distension forcée; et puis, la cloison longitudinale partageant en deux, comme dans l'observation de Dance, l'ouverture inférieure de la matrice, on prévoit les difficultés que présenterait l'accouchement.

Pour toutes ces considérations, dans les cas de bifidité du vagin et de l'utérus, j'estime qu'il convient de respectér l'obstacle apporté par la nature à l'entraînement de la passion, et de considérer la cloison vaginale comme une sage prévision de la providence.

Mais quand la bifidité n'intéresse que le vagin, quand la matrice reste étrangère à cette anomalie, on est autorisé à débarrasser la femme d'une infirmité qui, outre les ennuis dont elle remplit son existence, est, dans le cas de grossesse, la source de nombreux accidents au moment de la parturition.

Communication du vagin avec les organes voisins. — Les organes avec lesquels ces communications s'établissent sont l'urèthre, la vessie et le rectum; elles s'opèrent par des solutions de continuité des parois vaginales, et constituent ainsi des fistules que l'art parvient souvent à guérir, comme les fistules accidentelles, par des procédés divers que Jobert (de Lamballe) (1) et M. Marion Sims ont singulièrement perfectionnés.

Au point de vue exclusif de la copulation, les fistules ne sont pas dommageables, car le coït est toujours possible; seulement ces dispositions, en laissant sortir par le vagin, soit les urines, soit les excréments, soit les deux à la fois, inspirent le dégoût, et deviennent ainsi la source de répulsions morales.

Il n'en est pas de même au point de vue de la fécondation qui, ainsi que je le dirai plus loin, peut être profondément atteinte.

Dans d'autres circonstances, c'est le vagin imperforé qui s'ouvre dans le rectum. Cette anomalie est assez rare, et de pareilles observations, d'après Boyer, n'ont été faites qu'un très-petit nombre de fois (2) : on en trouve un exemple dans le *Journal des savants*, année 1777, et un second dans les *Mémoires de Berlin*, année 1774. L'illustre secrétaire de l'Académie de chirurgie, Louis, en cite un troisième exemple sur lequel je demande la permission de m'arrêter un instant, à cause des circonstances qui l'accompagnèrent et de la discussion à laquelle il donna lieu, et qui est fort peu connue.

Dans une thèse soutenue sous sa présidence aux écoles de chirurgie, et dont les bibliophiles s'accordent à lui attribuer la paternité, Louis raconte qu'une jeune fille, chez laquelle il n'existait aucune trace des parties externes de la génération, était réglée par l'anus. Son amant, poursuit-il, lui arracha l'aveu de ce vice de conformation, et, dans ses transports amoureux, il la supplia de lui permettre de s'unir à elle par la seule voie qui lui restait : elle y consentit, devint enceinte et accoucha à terme, par l'anus, d'un enfant bien constitué (1).

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(1) Jobert, *Traité des fistules vésico-utérines, vésico-utéro-vaginales, entero-vaginales et recto-vaginales*. Paris, 1852.

(2) M. Le Fort, dans sa thèse de concours, *Des vices de conformation de l'utérus et du vagin*, 1863, rappelle que Barbaut en cite quelques exemples dans son *Traité d'accouchements*, t. I, p. 59; que Puzos et Grégoire assistèrent, en juin 1739, à un accouchement en tout semblable à celui rapporté par Louis; que Devigne et Vermont furent témoins d'un accouchement opéré dans les mêmes circonstances; qu'enfin Rossi rapporte un cas (*Archives générales de médecine*, t. X, 1827), dans lequel il avait cru d'abord avoir affaire à une rétention menstruelle, tandis qu'il s'agissait d'une grossesse.

Comme conséquence de cette observation, Louis demanda aux casuistes si une femme, privée de vulve, était, oui ou non, en droit de chercher dans l'anus la voie de la propagation. Les théologiens s'émurent, des cris de réprobation s'élevèrent contre le célèbre chirurgien qui ne tarda pas à avoir contre lui le Parlement et la Sorbonne. Il fut interdit.

Cependant la question n'était pas neuve pour les casuistes et avait été, bien longtemps avant Louis, approfondie par les pères Cucufe et Tournemine. A ce problème : *An imperforata mulier possit concipere?* les deux savants pères que je viens de citer avaient décidé « qu'une fille, privée de la vulve en apparence, devait trouver dans l'anus des ressources pour remplir le vœu de la reproduction ». Sanchez, le fameux casuiste espagnol que tout le monde connaît, avait partagé l'opinion des pères Cucufe et Tournemine ; cependant, malgré cette unanimité de trois grandes lumières de la théologie, les papes avaient fait un cas réservé aux jeunes filles qui tenteraient cette voie.

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(1) Voici en entier le texte même de cette curieuse observation « Alia imperforationis apparentis species hic manet recensenda de quâ » non ita pridem Parisiis vidimus exemplum notatu dignum, vernacule » in academiarum commentariis non tradendum, ob verecundiam de re » pudendâ servandam. Adolescentula in quâ nullum vulvæ et vaginæ » vestigium, per anum purgationes menstruas patiebatur : eam vir » quidem adamavit, et huic quâ datâ viâ se commisit, non tangenda » transiliens vada, quod alibi nefanda fuisset fætidas in hoc casu fuit » secundùm naturæ intentum. Gravida enim facta fœtum tempore opportuno enixa est, lacerato ani sphinctore. In uxore sic dispositâ, uti fas » sit, vel non, judicent theologi morales ? » (*De paritum externarum generationi inserventium in mulierebus, etc.*).

Louis, par sa question indiscrète : *In uxore sic disposità uti fas sit, vel non, judicent theologi morales?* mettait donc en suspicion les décisions de Rome, et justifiait, jusqu'à un certain point, les rigueurs exercées contre lui par la Sorbonne et le Parlement.

Cette affaire, on le comprend, ne se passa pas dans le huis clos, et le problème, fort débattu en France, fut de nouveau soumis à la sagesse du souverain pontife. Le pape Benoît XIV, qui portait alors la tiare, plus philosophe et plus éclairé que ses prédécesseurs, permit l'usage de la *parte-poste* dans le sens du père Cucufe.

En présence d'une pareille décision et en souvenir du fait rapporté par Louis, Pougens n'hésite pas à donner le conseil suivant : « Les jeunes femmes stériles seraient peut-être autorisées, ou devraient, au contraire, tenter les deux voies, pour s'assurer de la véritable route de la propagation (1). »

Comme on le voit, Pougens répudie cette maxime de la sagesse des nations : *Dans le doute, abstiens-toi.*

C. — *Anomalies multiples de l'appareil copulateur.*

Moins que chez l'homme les anomalies multiples de l'appareil copulateur de la femme peuvent induire en erreur sur le sexe de la personne; en dehors du fait rapporté par Isidore Geoffroy Saint-Hilaire de ce moine qui donna des preuves manifestes du sexe féminin (2), la science ne connaît qu'un fait unique d'une femme mariée comme homme et ayant toujours vécu comme tel; c'est celui du nommé Valmont, dont l'observation a été publiée par MM. Bouillaud et Manec, et sur laquelle je reviendrai tout à l'heure (3).

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(1) Pougens, *Dictionnaire de médecine pratique*, t. IV, p. 1626, 2e édit.

(2) Isidore Geoffroy Saint-Hilaire, *Histoire générale et particulière des anomalies de l'organisation chez l'homme*, 1832-1836.

(3) *Exposition raisonnée d'un cas de nouvelle et singulière variété*

Les anomalies qui, extérieurement, peuvent induire en erreur sur le sexe d'une femme portent tout à la fois sur le clitoris, sur le canal de l'urèthre et sur la vulve, compliquées quelques fois par la présence d'un ovaire.

Le clitoris peut avoir des dimensions qui se rapprochent de la verge d'un adolescent de douze à quinze ans; il est alors pourvu d'un gland et d'un prépuce proportionnés au volume de l'organe, et entre en érection sous l'influence d'idées lascives.

Le gland du clitoris n'est jamais percé à son extrémité, comme chez l'homme; mais le canal de l'urèthre, au lieu de se terminer, comme chez la femme, sous l'arcade pubienne, peut se prolonger plus ou moins loin, sous le clitoris, et simuler un véritable hypospadias.

Si, d'autre part et en même temps, l'ouverture vulvaire est oblitérée par l'adhérence des deux grandes lèvres, on a le simulacre d'un scrotum, avec un raphé un peu plus accentué, il est vrai, qu'à l'état normal; ce faux scrotum est vide, il ne contient ni testicules, ni cordon spermatique; c'est l'image de celui du cryptorchide.

Cependant un corps ovoïde, de la forme et de la grosseur d'un testicule, peut se rencontrer dans une des grandes lèvres, et alors, on est porté à croire à une monorchidie. M. Léon Le Fort rapporte une observation curieuse de ces dispositions, relative à une jeune fille de vingt ans, dont Debout présenta, en 1859, à la Société de chirurgie, le moule en plâtre des parties externes de l'appareil génital, et opérée avec succès par Huguier, qui lui fit un vagin artificiel.

Je ne rapporterai de cette observation intéressante que les anomalies qui rentrent dans le cadre de cet article : « Le

d'hermaphrodisme observée chez l'homme (*Journal universel et hebdomadaire de médecine et de chirurgie pratiques*. Paris, 1833.)

clitoris, dit M. Le Fort, du volume du petit doigt, long de 4 à 5 centimètres, se termine par un gland à la base duquel, comme dans les cas d'hypospadias, il existe une ouverture par laquelle s'écoule l'urine; en arrière de la couronne du gland, sur le corps de l'organe, existe un repli cutané qui simule un prépuce refoulé. Sous l'influence de la moindre idée lascive, et souvent même spontanément, cet organe entre en érection d'une façon désagréable pour la malade.

» De chaque côté du clitoris existent les grandes lèvres dont le développement est normal; celle du côté gauche offre à sa partie moyenne un relief dû à la présence de l'ovaire, sorti de la cavité du bassin par le canal inguinal. Cette saillie de la grande lèvre lui donne l'aspect de l'une des bourses. Une particularité ajoute un nouveau titre à cette ressemblance : chaque fois que le clitoris entre en érection, on voit un mouvement ascensionnel se produire dans les grandes lèvres, comme si elles étaient doublées d'un muscle crémaster.

» Cet ovaire, que plusieurs confrères considèrent comme un testicule, est un corps ovoïde du volume d'une grosse amande. Il offre la consistance molasse des organes glandulaires; une pression, même légère, y détermine de la douleur; à sa partie supérieure, à travers l'épaisseur de la grande lèvre, on constate l'existence d'un petit cordon fuyant sous la pression des doigts; ce cordon disparaît au niveau de la branche horizontale du pubis.

» Lorsqu'on écarte les grandes lèvres, on ne trouve aucun vestige d'ouverture vulvaire; celle-ci est remplacée par une cloison, formée à l'extérieur par une peau recouverte d'épithélium. Sur la ligne médiane existe un raphé qui se prolonge de la commissure des grandes lèvres à l'ouverture située en arrière du gland du clitoris (1). »

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(1) Le Fort, *Des vices de conformation de l'utérus et du vagin*. Paris, 1863, p. 204.

Malgré cette multiplicité de malformations le sexe de la malade ne fut pas méconnu, parce qu'il existait les caractères généraux de la femme : absence de barbe, développement des seins, formes arrondies, bassin évasé et surtout la menstruation.

Les fonctions génitales, comme copulation et comme fécondation, étaient compromises. Il est probable que l'opération pratiquée par Huguier a rétabli au moins la fonction copulatrice, puisque l'orifice vulvaire, au départ de la malade, permettait facilement l'introduction du doigt indicateur et du spéculum.

Le fait de M. Bouillaud, le seul, je le répète, d'un individu vraiment femme par les organes internes et essentiels, et dont le sexe fut méconnu pendant toute la vie, se rapporte à un malade, du nom de Valmont, tailleur de son état, marié et veuf comme homme, et qui mourut du choléra en 1832, dans le service de M. Bouillaud, à la Pitié.

Voici la description que fait M. Bouillaud de l'appareil génital externe de cet individu : « Dans la région des organes génitaux externes, on voit une verge de grosseur moyenne terminée par un gland bien conformé, ainsi que le prépuce dont il est recouvert. L'ouverture du méat urinaire, au lieu d'occuper le centre même du sommet du gland, existe vers la partie inférieure de cette partie.

» Les bourses sont petites, mais, d'ailleurs, très-reconnaissables; les téguments qui en forment la partie essentielle offrent la couleur brune et le froncement qui existent à l'état normal et sont ombragés de poils; elles sont divisées en deux parties symétriques par un raphé qui s'étend du prépuce à l'anus, et qui paraît un peu plus dur et saillant qu'on ne le rencontre ordinairement chez l'homme. Les bourses sont dépourvues de testicules; on n'y rencontre aucun vestige de ces organes; elles ne contiennent qu'un tissu cellulaire lamelleux, semblable à celui que l'on trouve dans l'épaisseur des nymphes. »

Il est malheureux que l'observation de cet individu, offrant un utérus, des ovaires et des trompes parfaitement constitués, n'ait pu être complétée par des renseignements relatifs à ses mœurs, à ses habitudes et à son mariage. Il était veuf quand il entra à l'hôpital, et l'on ne découvrit son organisation que par l'autopsie.

Dans tous les cas, les facultés génitales, comme femme, étaient nulles chez Valmont : il n'y avait nul vagin pour recevoir la verge et pour communiquer avec l'utérus.

A-t-il exercé la copulation comme homme? c'est probable, puisque la verge était de grosseur moyenne.

En résumé, les anomalies multiples de l'appareil externe de la génération chez la femme s'opposent à la copulation féminine et à la fécondation, mais donnent rarement lieu à des erreurs sur le sexe, comme les anomalies multiples de l'appareil génital externe chez l'homme.

CHAPITRE II

LÉSIONS ORGANIQUES DE L'APPAREIL COPULATEUR.

Ce chapitre sera court, car si les diverses affections qui peuvent y figurer ont une importance assez grande dans la pathologie générale des organes génitaux de la femme, elles ne présentent qu'une valeur secondaire au point de vue qui nous intéresse.

Ces affections sont toutes plus ou moins douloureuses, et l'augmentation des souffrances que déterminerait, à coup sûr, la présence d'un corps étranger mis en contact avec les parties malades, est un motif suffisant pour faire redouter aux femmes l'acte du coït. Cette abstention est, il est vrai, momentanée, et prend sa source dans une série d'accidents qui ne rentrent que d'une manière subsidiaire dans le cadre de mon sujet.

Je ne m'y arrêterai donc pas davantage.

Mais si ces phénomènes morbides, en tant qu'ils constituent par eux-mêmes un obstacle à la copulation, méritent à peine d'être mentionnés dans un ouvrage de la nature de celui-ci, il n'en est plus de même quand on les étudie dans leurs conséquences et qu'on les considère comme des causes prochaines de l'impuissance chez la femme.

Et, en effet, un des résultats les plus fâcheux, à notre point de vue, que ces affections peuvent produire est le rétrécissement ou l'oblitération du vagin ou de la vulve, soit par l'agglutination immédiate des parois vulvaires ou vaginales, soit par la formation de brides ou de callosités.

Les plaies, les ulcérations, les excoriations, les déchirures, l'inflammation, etc., peuvent amener l'un ou l'autre des accidents que je viens de signaler; les exemples n'en sont pas rares dans la science.

Paul de Sorbait raconte qu'une jeune fille s'étant endormie sur un vase dans lequel elle avait placé des charbons pour se chauffer brisa ce vase et se brûla toute la région du périnée, de la vulve et du pubis. Cet accident, mal soigné, détermina la réunion des grandes lèvres et ne laissa plus entre elles que deux petites ouvertures, l'une près de l'anus et l'autre au-dessous du pubis. La femme devint plus tard enceinte, et il fallut, pour que l'accouchement s'effectuât, inciser la cicatrice.

Arnaud cite le fait d'une jeune fille qui, à la suite d'une course à âne, éprouva aux parties génitales externes une inflammation avec excoriation des grandes lèvres; celles-ci, abandonnées à elles-mêmes, s'agglutinèrent, en respectant toutefois le méat urinaire, et en laissant un trou par lequel s'écoulaient les règles. Comme dans l'observation précédente, la jeune fille se maria, devint enceinte et dut subir l'incision de la cicatrice pour permettre le passage à l'enfant.

Les ulcérations syphilitiques sont souvent la cause d'une semblable adhérence, et il arrive quelquefois alors que la preuve manifeste d'une faute antérieure au mariage devient pour l'époux un signe non équivoque de virginité. Dupuytren fut appelé un jour pour détruire une de ces adhérences qui avait résisté à toutes les approches conjugales, et se garda bien, comme on doit le comprendre, de dissiper l'heureuse erreur du mari.

La diathèse scrofuleuse, de son côté, détermine parfois un ulcère rongeant auquel Huguier, qui l'a le premier décrit, donne le nom d'*Esthiomène de la vulve*. Outre les souffrances que le coït détermine pendant la période d'état de l'ulcère, la cicatrisation de l'esthiomène, sous l'influence de moyens appropriés, peut amener des adhérences soit à la vulve, soit au vagin, qui rendent les rapprochements sexuels ou impossibles ou tout au moins difficiles. La conduite à tenir est celle que je viens d'indiquer pour les ulcérations syphilitiques.

L'ouverture vulvaire peut être encore rétrécie à la suite de la déchirure du périnée, que cette déchirure arrive d'une manière traumatique ou qu'elle soit produite par un accouchement. Les cas de ce genre se rencontrent assez fréquemment dans la pratique et sont en nombre assez suffisant dans tous les ouvrages d'obstétrique, pour qu'il soit inutile d'en rappeler ici quelques-uns.

Les déchirures traumatiques du vagin offrent une gravité qui les éloigne de mon sujet; cependant je rappellerai, comme circonstance intéressante pour nous, que cet accident peut même se produire pendant l'acte du coït. Diemerbroeck rapporte l'observation d'une déchirure du vagin, amenée par la présence de la verge, et qui détermina une hémorrhagie mortelle; Dugés cite un exemple du même genre, dans le *Diction-*

naire de médecine et de chirurgie pratiques; Plazzoni a rencontré une lésion analogue, due à la même cause, etc.; mais, je le répète, ces accidents, malgré l'intérêt qu'ils présentent, ne méritent ici qu'une simple mention.

Mais le vagin peut être rétréci et même oblitéré à la suite d'un accouchement long et pénible, sans solution de continuité des tissus. Moreau cite l'observation d'une dame anglaise dont le rétrécissement vaginal, à la suite d'un premier accouchement, ne laissait même plus passer les menstrues.

Les injections vaginales caustiques sont la source à laquelle il faut le plus fréquemment faire remonter l'oblitération du vagin. Une allumeuse de réverbères de Genève s'étant injecté du vitriol dans l'organe copulateur, afin de provoquer un avortement, les parois de ce canal contractèrent de telles adhérences que le produit de la conception ne put passer, et la femme mourut.

Quelquefois il ne se forme pas des adhérences, surtout quand les injections sont purement astringentes, mais alors les parois vaginales deviennent dures, calleuses et s'épaississent au point d'amener un rétrécissement incompatible avec le coït. Les prostituées savent tout le parti qu'elles peuvent tirer de ces circonstances, et il en est, surtout en Italie, qui vendent pendant de longues années, et grâce à des injections de ratanhia ou de tannin, une prétendue virginité que la syphilis a plus d'une fois marquée de stigmates.

Quelle que soit la cause à laquelle il faille rapporter soit l'adhérence des parois vulvaires ou vaginales, soit le rétrécissement ou l'oblitération de l'organe copulateur, il convient, tout en utilisant l'action des corps dilatants, de recourir aux incisions et scarifications pour détruire les cicatrices et les brides les plus résistantes. L'opérateur devra faire lui-même le pansement que cette thérapeutique exige; car, négligée, la médication deviendrait bientôt elle-même une nouvelle cause d'obturation.

CHAPITRE III

LÉSIONS VITALES DE L'APPAREIL COPULATEUR

Les affections qui remplissent ce nouveau chapitre de l'histoire des obstacles apportés aux conditions physiologiques du coït chez la femme sont les névroses vulvo-vaginales, depuis la simple hyperesthésie qui rend l'union sexuelle pénible et douloureuse jusqu'au vaginisme qui, outre les souffrances qu'il impose à la femme, est un empêchement à l'intromission de la verge dans le vagin.

Je vais donc dire ce que nous savons sur les causes et le traitement de ces névroses douloureuses et spasmodiques.

Hyperesthésie vulvo-vaginale. — Sans arriver à cet état douloureux et spasmodique dont je parlerai tout à l'heure sous le nom de *vaginisme*, l'appareil copulateur est souvent le siége d'une hyperesthésie qui rend toujours pénibles et quelquefois impossibles les rapports conjugaux.

L'hystérie est incontestablement la cause prédisposante la plus commune de cet état douloureux; Landry, qui avait fait une étude particulière de l'hyperesthésie vulvo-vaginale, admettait si bien cette cause qu'il cautérisait, avec le nitrate d'argent, les points hyperesthésiés, dans l'intention non-seulement de calmer la névralgie vulvo-vaginale, mais encore les autres manifestations de l'hystérie.

L'arthritisme, l'herpétisme, sont aussi des causes fréquentes de cette hyperesthésie qui, bien souvent encore, se fixe sur la cicatrice d'une lésion produite par l'accouchement.

M. Noël Gueneau de Mussy pense que, dans beaucoup de cas, le point douloureux rencontré dans le cul-de-sac utérin est un retentissement de l'hyperesthésie ovarienne, et que c'est à elle seule qu'il faut rapporter la douleur que les femmes éprouvent pendant le coït lorsque la verge porte sur ce point.

L'hyperesthésie ovarienne, selon M. Noël Gueneau de Mussy, est toujours reconnaissable : « elle est souvent accompagnée, dit-il, de névralgies dans les nerfs lombaires, sciatiques, quelquefois même intercostaux.. Leur coïncidence avec la névralgie lombaire me paraît sous la dépendance d'une loi que j'ai eu souvent l'occasion de vérifier : c'est que les névralgies viscérales sont presque toujours compliquées de névralgies de nerfs spinaux ; ainsi j'ai presque toujours vu la névralgie intercostale compliquer la gastralgie, etc. (1). »

Quoi qu'il en soit et pour en revenir à l'hypéresthésie soit vulvaire, soit vaginale, je dirai que, si d'une manière absolue elle n'empêche pas la copulation, elle rend les approches si douloureuses pour la femme, que le coït physiologique n'existe plus et que les conditions les plus douces sont détruites.

A tous les points de vue, il importe donc de remédier à cet état.

La cause qui le tient sous sa dépendance sera d'abord combattue ; dans un cas où l'hypéresthésie vulvaire semblait liée à l'herpétisme, M. Gueneau de Mussy associa au traitement local dont je vais parler une solution d'arseniate de soude dont il n'eut qu'à se louer.

Avec le traitement général approprié à la cause qui produit l'hyperesthésie, on fait, sous différentes formes, des applications locales émollientes, calmantes, sédatives ou narcotiques, telles que les suppositoires suivants, dont la formule appartient à M. Gueneau de Mussy :

Beurre de cacao.............	2 grammes.
Bromure de potassium.......	30 centigrammes.
Extrait de belladone.........	10 —

La thérapeutique de la névrose vulvo-vaginale comprend encore des moyens chirurgicaux, comme la dilatation, le massage, etc., dont je vais parler à l'article suivant, consacré au vaginisme qui n'est en quelque sorte qu'une exagération de l'hyperesthésie vulvo-vaginale.

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(1) *Gazette des hôpitaux*, août 1871.

Vaginisme. — Ce mot a été proposé, en 1861, par M. Marion Sims dans un mémoire qu'il présentait à la Société obstétricale de Londres, pour désigner « l'hyperesthésie excessive de l'hymen et de la vulve, associée à cette contraction spasmodique et involontaire du sphincter vaginal qui s'oppose au coït » (1).

Sans doute ce sujet avait été entrevu par les observateurs qui nous avaient précédé, et, — pour ne parler que des travaux parus en France, — depuis Guillemot qui, en 1828, publia dans le *Journal universel des sciences médicales*, la première observation authentique de coarctation vulvo-vaginale, la question avait été préparée par les travaux de Dupuytren, de Lisfranc, de Tanchou, d'Hervez de Chégoin et surtout de Huguier.

Mais c'est à partir de 1860 que les communications de Debout, Michon et Marion Sims donnèrent à cette question l'importance qu'elle méritait, et la marquèrent du sceau de la nouveauté par la physionomie, le traitement et le nom qu'ils imposèrent à l'affection.

Le vaginisme est caractérisé par deux phénomènes dont la présence simultanée constitue toute la maladie ; ces deux phénomènes sont la douleur et la contraction du sphincter vulvo-vaginal.

Dans le repos de l'organe copulateur, c'est-à-dire en dehors du coït et des investigations médicales, la douleur est assez généralement peu intense ; quelquefois ce n'est qu'une sensation de sécheresse, de tension aux parties sexuelles ; dans d'autres circonstances la douleur s'accentue par la marche, par l'émission des urines ou des règles et surtout par le moindre frottement. Une dame à qui je donnais des soins ne pouvait s'asseoir un peu brusquement ni croiser les jambes sans éprouver une douleur vive qui lui arrachait un cri ; dans quelques cas et chez les femmes éminemment nerveuses, le souvenir seul des souffrances endurées éveille une sensation pénible et souvent même douloureuse.

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(1) Marion Sims, *Notes cliniques sur la chirurgie utérine dans ses rapports avec la stérilité*, traduit par Lhéritier. Paris, 1866, p. 384.

La douleur ne revêt pas, chez toutes les malades, le même degré d'acuité ; il y a ici, comme dans tous les états pathologiques, des inégalités qui vont de la simple hyperesthésie à la souffrance la plus excessive.

Mais c'est surtout par le coït que la douleur devient intense ; cet acte est pour la malade un véritable supplice qu'elle redoute d'abord et auquel elle finit par se refuser d'une manière absolue. Si par amour, par raison ou par tout autre motif elle s'arme d'assez de courage pour braver les tourments qui l'attendent, ses forces la trahissent souvent, et la malheureuse tombe, au milieu de cris et de mouvements désordonnés, dans un évanouissement qui la rend insensible à tout. Mais malgré la résignation de la femme, et malgré son insensibilité syncopale, le coït est même rendu presque toujours impossible par la contracture vaginale.

L'examen des malades permet d'établir tout à la fois le siége de la douleur et celui de la contracture.

L'hyperesthésie s'étend à toutes les parties de la vulve, depuis le méat urinaire jusqu'à la fourchette ; mais il y a quelquefois des points plus douloureux les uns que les autres : tantôt la sensibilité la plus vive se remarque à l'orifice de la glande vulvo-vaginale, tantôt elle se trouve au point où l'hymen prend son origine, ou plus bas à la fourchette même, là où cette membrane s'épanouit.

Les grandes et les petites lèvres ne restent pas étrangères à cette hyperesthésie de toute la vulve, et sont elles-mêmes le siége d'une sensibilité douloureuse que le moindre frottement exaspère.

Sous l'empire de cet état douloureux, le sphincter vaginal se contracte d'une manière spasmodique, entraînant presque toujours avec lui la contracture du sphincter anal et celle du muscle transverse du périnée.

Si la douleur fait repousser par la femme le rapprochement sexuel, celui-ci est rendu impossible par le resserrement de l'anneau vulvaire dont l'étroitesse permet à peine quelquefois le passage d'un simple stylet.

Dans ces conditions la femme est doublement inhabile au coït et par suite à la fécondation.

Aux motifs tirés de l'impossibilité d'introduire le pénis dans le vagin, Scanzoni croit devoir ajouter une autre explication pour rendre compte de la stérilité qui accompagne le vaginisme. Selon lui, les contractions du sphincter vaginal se communiquent non-seulement aux fibres du releveur de l'anus qui l'avoisinent, mais encore à celles qui arrivent au vagin sous les aponévroses pelvienne et recto-vaginale, de telle sorte que ces contractions, non-seulement empêchent l'entrée du sperme dans le vagin, mais encore repoussent violemment la moindre quantité de liquide qui a pu s'y introduire.

Quelle que soit la réalité de cette explication, le vaginisme, arrivé à un certain degré, frappe la femme qui en est atteinte tout à la fois d'impuissance et de stérilité.

Heureusement, comme nous le dirons tout à l'heure, l'affection n'est pas au-dessus des ressources de l'art et cède ordinairement à de simples moyens médicaux, sans qu'il soit nécessaire, ainsi qu'on l'a préconisé, de recourir à des opérations sanglantes et qui, quelquefois même, ne sont pas sans danger.

Mais pour établir d'une manière rationnelle les bases de cette médication, il importe de se bien fixer sur les origines de l'affection et de pénétrer les causes qui lui donnent naissance et l'entretiennent.

En ce point de pathogénie deux opinions sont en présence : pour les uns, le vaginisme est toujours sous l'empire d'une lésion organique, soit de l'appareil copulateur, soit de quelque partie plus profonde de l'appareil génital ; pour les autres, sans contester l'influence des lésions organiques locales ou éloignées, l'affection est, dans beaucoup de cas, idiopathique et rentre dans le cadre des affections nerveuses spasmodiques.

Les premiers, prenant pour terme de comparaison la fissure à l'anus, donnent pour type des lésions locales, causes du vaginisme, la fissure de la muqueuse qui recouvre l'anneau vulvo-vaginal ; puis, s'appuyant sur la loi établie par Boyer que les fibres musculaires recouvertes d'une muqueuse deviennent le siége d'une contracture spasmodique quand la muqueuse s'enflamme, ils reconnaissent pour causes du vaginisme la vulvite, la vaginite, simples ou spécifiques, les érosions, l'eczéma, l'herpès ; des érosions diverses, des excroissances verruqueuses, polypeuses ; les corps étrangers dans le vagin, l'accouchement, etc., en un mot, tout ce qui peut produire un état inflammatoire de la muqueuse vulvo-vaginale.

Enfin, appelant à leur aide les actions reflexes, ils placent également parmi les causes du vaginisme les lésions d'organes plus ou moins éloignés du siége de l'affection, telles que certaines maladies de l'anus, du rectum, de l'utérus, des ovaires, etc., etc.

Sans nier l'influence de ces divers états pathologiques sur la production du vaginisme, nous nous rangeons volontiers à l'opinion de ceux qui admettent, dans un grand nombre de cas, l'essentialité de l'affection ; pour nous, cette conviction nous est venue non-seulement après de nombreuses observations personnelles, où il nous a été impossible de constater la moindre lésion organique, mais encore après avoir lu attentivement les faits rapportés par les adversaires mêmes de l'essentialité.

Cette manière de voir trouve une nouvelle confirmation dans les différents modes de traitement qu'il nous reste à exposer, et qui tous se recommandent, à des degrés divers, à l'attention du praticien.

Le traitement du vaginisme peut être médical ou chirurgical.

Le traitement médical est général ou local.

Le premier comprend tous les agents de médication antispasmodique et narcotique, et s'adresse surtout aux constitutions essentiellement nerveuses; l'arsenic a, de son côté, rendu de réels services dans les cas où la vulve est le siége d'eczéma, de prurit, etc.

Mais le médicament par excellence, celui que quelques praticiens considèrent comme le spécifique du vaginisme, est le bromure de potassium, dont l'action est inexplicable, si des lésions organiques précèdent toujours la contracture douloureuse du sphincter vaginal. Raciborski, qui s'était fait son avocat le plus chaud, le donnait, au début, à la dose de 2 grammes par jour, et arrivait jusqu'à 4 et 6 grammes dans le même espace de temps.

Nous ne partageons pas la confiance absolue que le bromure de potassium inspire à quelques-uns. Nous l'avons souvent administré, et sauf deux ou trois circonstances où il nous a paru modifier heureusement des dysménorrhées existantes, il ne nous a pas donné les résultats d'un spécifique; il nous a semblé seulement un adjuvant utile à la médication locale.

Celle-ci, bien évidemment, doit d'abord s'adresser à la lésion, s'il en existe une, et est par conséquent aussi variable que les accidents qu'il faut combattre; la vulvite, la vaginite, l'herpès, l'eczéma, la fissure, etc., pour ne parler que des affections locales, exigent chacune un traitement topique spécial que nous n'avons pas à décrire ici.

Mais parmi les moyens locaux plus particulièrement dirigés contre la contracture douloureuse du vagin, se placent les bains généraux ou de siége, tièdes, simples ou contenant du son, de la jusquiame, de la morelle, etc; les lavements narcotiques ou antispasmodiques, de laudanum, de belladone, de castoréum, de valériane, d'asa fœtida, etc.; les fumigations avec les mêmes agents; les embrocations avec le liniment chloroformé ou la pommade belladonée; les cataplasmes émollients, laudanisés, appliqués sur la vulve; les injections hypodermiques ou sous-muqueuses, pratiquées avec le sulfate neutre d'atropine ou le chlorhydrate de morphine; les suppositoires belladonés, dans lesquels on peut, à l'exemple de M. Gueneàu de Mussy, incorporer du bromure de potassium. Enfin le pansement avec la poudre d'iodoforme, comme le propose M. Tarnier (1).

Le traitement chirurgical s'est enrichi, dans ces dernières années, d'opérations qui ne sont ni sans douleur ni sans danger, et auxquelles nous ne conseillerons d'avoir recours que lorsqu'auront échoué toutes les autres médications.

Parmi les moyens que le chirurgien doit d'abord tenter, se trouve la dilatation, qui peut être faite soit d'une manière graduelle, soit d'une manière brusque.

La dilatation graduelle est pratiquée avec toutes espèces de corps dont on augmente progressivement le volume : de ce nombre sont les mèches enduites de pommade belladonée, l'éponge préparée, la racine de gentiane, des appareils en caoutchouc, en bois, en ivoire, et enfin les doigts mêmes de l'opérateur dont à volonté il gradue l'écartement.

La dilatation brusque ou forcée a été inspirée par le procédé que Récamier employait contre la contracture anale.

On commence d'abord par anesthésier la malade, puis, l'insensibilité obtenue, l'opérateur introduit dans le vagin ses deux doigts indicateurs, et, les recourbant en crochet, il tire en sens inverse et transversalement l'anneau vulvo-vaginal qu'il distend facilement.

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(1) Tarnier, *Archives de gynécologie*, novembre 1875.

Cette distension peut également s'opérer avec le spéculum trivalve ou bivalve que l'on introduit fermé et qu'on retire brusquement ouvert.

Pour être profitable, la dilatation forcée exige des soins consécutifs sur lesquels on ne saurait trop insister : non-seulement il faut continuer la dilatation progressive avec les mèches belladonées, les éponges préparées, la racine de gentiane, etc., mais encore persévérer dans les moyens médicaux dont nous avons parlé plus haut, tels que bains, lavements, suppositoires, embrocations, etc.

Parmi les opérations sanglantes, toutes n'offrent pas le même degré de gravité. *L'incision de la muqueuse*, imaginée par Michon, est sans inconvénient et peut être tentée quand ont échoué les moyens exposés ci-dessus. Cette opération consiste à pratiquer sur la muqueuse vaginale quelques incisions superficielles et à faire ensuite la dilatation progressive avec des mèches belladonées.

La division du sphincter vulvaire avait été faite en France bien longtemps avant que M. Marion Sims la préconisât en Amérique. Huguier est le premier qui en ait eu l'idée et le premier aussi qui l'ait pratiquée en 1834. Plus tard, Pinel-Grandchamp et Dupuytren suivirent cet exemple, ainsi que Michon qui, en 1850, y ajouta la dilatation d'arrière en avant et latéralement.

Malgré de semblables recommandations, la division du sphincter vulvaire et celle du sphincter anal ne doivent point être entreprises à la légère. Nous sommes loin de les proscrire de notre arsenal thérapeutique, mais nous estimons qu'il les faut réserver pour les cas rebelles et qui n'ont cédé à aucun des autres traitements.

A la statistique de M. Marion Sims qui, sur trente neuf cas de vaginisme traités par la section du sphincter, compte trente-neuf guérisons, j'oppose celle de Scanzoni, qui affirme avoir guéri plus de cent malades, sans avoir eu jamais recours à une opération sanglante.

Je suis certainement de cet avis, dans lequel me confirme une longue expérience personnelle.

CHAPITRE IV

LÉSIONS MÉCANIQUES DE L'APPAREIL COPULATEUR

TUMEURS. — CORPS ÉTRANGERS

Si pour la logique de la classification je rapproche les tumeurs et les corps étrangers développés ou introduits dans l'appareil copulateur, je dois les examiner séparément, parce qu'en dehors du seul point de contact qu'ils présentent dans leurs résultats par rapport à la copulation, ils n'ont rien de commun dans leur histoire, et s'offrent à l'observateur avec une étiologie, une marche et une terminaison qui me forcent de donner à chacun d'eux une place distincte.

TUMEURS DE L'APPAREIL COPULATEUR

Il est ici indispensable, tant sous le rapport du diagnostic que sous celui du traitement, de séparer les tumeurs dont la vulve est le siége de celles qui affectent plus spécialement le vagin.

§ I. — Tumeurs de la vulve.

Je les diviserai en deux classes : A. celles qui sont le produit d'une lésion organique de la vulve ; B. celles qui sont formées par la présence anormale et accidentelle d'un organe voisin.

A. — *Tumeurs de la vulve par lésions organiques.*

Parmi les tumeurs de la vulve par lésions organiques, les unes affectent une marche aiguë et rapide, et les autres une marche lente et chronique.

Au nombre des premières se placent les abcès et les tumeurs sanguines ou thrombus de la vulve.

Parmi les secondes se rangent l'éléphantiasis, les kystes, les loupes, les corps fibreux et le cancer de la vulve.

Je passerai rapidement sur chacune de ces affections, car si leur histoire offre une face qui regarde notre sujet, elles appartiennent bien plus à la pathologie générale des organes génitaux de la femme qu'à un traité sur l'impuissance. De plus, les tumeurs à marche aiguë ont une existence si fugitive qu'elles méritent à peine ici une mention ; d'ailleurs l'une d'elles, le thrombus, se produit généralement au milieu de circonstances peu favorables au coït, car tous les auteurs qui s'en sont occupés le signalent, soit comme un accident des derniers temps de la grossesse, soit comme un épiphénomène de l'accouchement.

Sans doute les abcès et les thrombus de la vulve peuvent par leur volume empêcher l'intromission de la verge dans le vagin et constituer un obstacle matériel au congrès ; mais c'est surtout par les douleurs qu'ils occasionnent qu'ils doivent être considérés comme s'opposant à la copulation.

De plus leur répétition fréquente est souvent la cause d'indurations aux grandes ou aux petites lèvres, qui rétrécissent l'ouverture de la vulve au point de rendre le coït impossible ou tout au moins très-douloureux. J'ai soigné une jeune femme qui, pendant plusieurs années eut un abcès vulvaire à chaque époque menstruelle; les petites lèvres, siéges alternatifs de ces abcès, étaient devenues énormes et obstruaient complétement l'ouverture vaginale; il fallait les plus grandes précautions pour introduire la verge, et encore cette intromission n'était jamais sans douleur.

Il n'en est pas de même des tumeurs à marche chronique, presque toujours indolentes et ne gênant le rapprochement sexuel que par l'obstacle que leur volume oppose à l'accomplissement de l'acte. Assez rares et ne se montrant pour la plupart qu'à un âge avancé de la vie, elles exigent toutes l'intervention de la médecine opératoire, et rentrent, par cela même, dans le domaine de la chirurgie générale.

B. — *Tumeurs de la vulve dues à la présence d'un organe voisin.*

Les organes qui peuvent venir faire tumeur à la vulve sont le vagin, la matrice et l'intestin.

Le vagin et la matrice n'apparaissent à l'orifice vulvaire et par conséquent ne s'opposent à la copulation que par suite de déplacements qui m'occuperont ailleurs.

La présence de l'intestin dans les grandes lèvres m'arrêtera ici un instant, parce que ce genre de hernie est peu connu, et que, d'après les rares exemples que nous en avons, il paraît affectionner l'âge le plus propre à la génération.

Cette hernie, signalée, je crois, pour la première fois par A. Cooper, qui en a donné deux observations et qu'il appelait *pudendal hernia*, est ainsi décrite d'après lui dans la *Bibliothèque du médecin praticien :* « La tumeur formée par cette hernie paraît, à l'extérieur, un peu au-dessus d'une ligne qui, partant de l'orifice extérieur du vagin, se dirigerait de dedans en dehors. Cette hernie débute comme la hernie périnéale et la hernie vaginale latérale. Elle pousse d'abord en bas le péritoine, qui va du vagin au rectum, et puis, au lieu de se développer dans le premier de ces canaux comme la hernie vaginale, au lieu de proéminer sur un point très-voisin de l'anus, comme la hernie périnéale, la hernie vulvaire se développe surtout dans l'épaisseur de la grande lèvre, sur le point indiqué par A. Cooper; pour y parvenir, les organes déplacés passent d'abord derrière un ligament large de l'utérus, poussent devant eux le péritoine dans le sillon rempli de tissu cellulaire qui sépare le vagin du rectum; puis ces organes écartent les fibres des aponévroses périnéales, celles du muscle releveur de l'anus au moment où il va s'insérer sur les côtés du vagin. D'après cette marche de la hernie, et le siége que son fond va occuper, on peut prévoir que l'artère vaginale sera placée en dedans du sac, l'artère honteuse interne en dehors. La position de ces deux vaisseaux fait entrevoir la nécessité d'un débridement méthodique dans les cas d'étranglement (1). »

J'ai dit tout à l'heure que cette hernie était peu connue, et qu'on l'avait toujours observée à l'âge le plus favorable à la copulation; la science, en effet, n'en possède que trois exemples bien authentiques; deux qui appartiennent à A. Cooper, et le troisième communiqué par M. J. Cloquet, à Murat, l'auteur de l'article VULVE du *Dictionnaire des sciences médicales*. Les malades du chirurgien anglais n'avaient que vingt-deux ans, et celle de M. Cloquet vingt-quatre ans.

Qu'on me permette de rapporter en entier cette dernière observation, qui me dispensera de plus longs développements sur ce sujet. « La domestique du garde-magasin de l'hôpital Saint-Louis, jeune fille âgée de vingt-quatre ans, d'une constitution sèche et nerveuse, vient me consulter, dit M. J. Cloquet, au mois de février de la présente année, sur une maladie qui lui était survenue depuis peu de temps aux organes extérieurs de la génération. L'ayant examinée, je trouvai, dans la partie postérieure de la grande lèvre droite une tumeur arrondie, rénitente, du volume d'un gros marron, qui soulevait la peau et faisait saillie en dedans de la vulve. Cette tumeur, un peu douloureuse au toucher, se prolongeait à la partie latérale droite du vagin, sous la forme d'une saillie longitudinale, longue de deux pouces environ, dure et résistante; la pression exercée avec le doigt sur cette dernière portion n'y occasionnait que des douleurs sourdes. La tumeur augmentait sensiblement de volume, devenait plus dure et plus tendue lorsqu'on faisait tousser la malade. La jeune fille y ressentait de temps à autre des engourdissements, et éprouvait de légères coliques dans toute la partie inférieure de la cavité abdominale ; du reste, les autres fonctions s'exerçaient librement, à l'exception de la marche qui était pénible, à raison de la gêne que produisait la tumeur par son volume, et des douleurs qui s'y manifestaient lorsque la malade s'était fatiguée par quelque exercice forcé. Cette tumeur avait paru peu à peu, sans douleur, depuis environ quinze jours; elle n'avait jamais causé de vives douleurs, de nausées, ni de vomissements. La malade attribuait son *effort* à des mouvements considérables qu'elle avait faits pour lever des paquets de linge et des baquets remplis d'eau. Comme elle était habituellement constipée, je pense que les efforts nécessités pour la défécation ont dû contribuer aussi très-puissamment à la production de sa maladie. Ayant fait coucher la malade sur le dos, dans la position ordinaire pour l'opération du taxis, je parvins, à l'aide d'une pression assez forte, exercée méthodiquement selon la direction de la tumeur, à diminuer d'abord son volume et à en obtenir ensuite l'entière réduction, laquelle se fit subitement par l'ascension brusque des parties déplacées, qui glissèrent tout à coup sous mes doigts en faisant entendre ce bruit particulier qu'on a désigné sous le nom de *gargouillement*... Je pratiquai ensuite le toucher dans la position verticale du corps; les viscères déplacés ne reparurent pas, et la jeune fille put marcher librement comme avant l'accident. Je voulus lui appliquer un pessaire en bondon, afin de comprimer et de retenir la portion relâchée du vagin qui avait livré passage à l'intestin, mais la malade ne voulut pas s'assujettir à le porter; et, bien qu'elle ait repris ses occupations habituelles depuis cette époque, sa tumeur ne s'est point reproduite, et elle jouit actuellement d'une parfaite santé (1). »

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(1) *Bibliothèque du médecin praticien*. Paris, t. I, p. 13.

Quoique M. J. Cloquet ne parle pas de la copulation et qu'il dise que toutes les fonctions, hors celle de la marche, se faisaient avec facilité et comme à l'état normal, il ne peut être douteux que le coït, s'il eût été tenté, aurait été sinon entièrement impossible, du moins très-douloureux. La réserve de l'écrivain était commandée par la position de la malade, bien qu'il ait pratiqué sur elle le toucher vaginal.

Quoi qu'il en soit, par le fait que je viens de rapporter et par les exemples analogues de A. Cooper relatés dans ses *Œuvres chirurgicales* et consignés dans le *Traité des hernies* de M. Lawrence, la hernie vulvaire n'offre aucun danger, n'expose pas à la récidive et cède facilement à la réduction. C'est donc, par conséquent, une cause essentiellement passagère d'impuissance, et sans la rareté qui la caractérise je n'aurais pas donné à son histoire une place aussi étendue dans ce livre.

§ II. — Tumeurs du vagin.

Comme pour les tumeurs de la vulve j'admettrai pour celles du vagin deux classes : A. les tumeurs produites par une lésion organique; B. les tumeurs constituées par la présence anormale et accidentelle d'un organe voisin.

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(1) Murat, *Dictionnaire des sciences médicales*, art. VULVE, t. LVIII, p. 418

A. — *Tumeurs du vagin produites par une lésion organique.*

Conformément à ce que j'ai dit des tumeurs de la vulve, les tumeurs du vagin par lésion organique peuvent offrir, les unes un caractère aigu, les autres une marche chronique.

Mais les unes et les autres ne me doivent point arrêter longtemps, parce que, je le répète, elles rentrent bien plutôt dans le cadre des ouvrages généraux de chirurgie et d'obstétrique qu'elles ne ressortent de mon domaine.

En effet, les tumeurs sanguines du vagin, si bien décrites par Legouais et Deneux, sont presque toujours des accidents de la parturition; et les abcès du vagin, ou pour parler plus exactement, les abcès faisant saillie dans cet organe, et dont la fréquence s'explique par la présence du tissu cellulaire qui soutient les parois de ce canal, n'offrent rien de remarquable à notre point de vue, si ce n'est qu'ils obstruent le libre passage du vagin et éloignent la femme de toute copulation par les douleurs atroces qu'ils déterminent pendant cet acte.

Les tumeurs à marche chronique, les kystes et les polypes ne présentent réellement dans leur histoire qu'un point intéressant à étudier : c'est leur diagnostic. Comme on va le voir, alors que je vais parler des hernies vaginales, il est de la plus haute importance de distinguer les kystes et les polypes de ces hernies, car si l'instrument tranchant doit être porté sur les premiers, il faut soigneusement se garder d'ouvrir la vessie et l'intestin. Mais toutes ces considérations appartiennent à la pathologie chirurgicale, qui fournit les éléments du diagnostic différentiel et les bases du traitement.

B. — *Tumeurs du vagin produites par la présence d'un organe voisin.*

Eu égard aux organes qui avoisinent le vagin, il ne peut y avoir que l'utérus, la vessie et le rectum qui viennent faire hernie dans ce canal.

La hernie déterminée par la matrice, c'est-à-dire par les déplacements de cet organe, par l'allongement hypertrophique de son col, etc., m'occuperont longuement dans une autre partie de cet ouvrage, où je me réserve de faire ressortir leur influence fâcheuse tout à la fois sur la copulation et sur la fécondité de la femme.

La hernie produite par la présence de la vessie m'occupera un instant sous le nom de *cystocèle.*

Enfin la hernie déterminée par la procidence de l'intestin m'arrêtera aussi un moment sous les noms de *hernie vaginale* proprement dite et sous celui de *rectocèle*, quand c'est le rectum qui fait saillie dans le vagin et sort par la vulve.

Il ne faut pas croire que chacune de ces hernies se présente dans la pratique isolément, dégagée de toute complication ; dans la très-grande majorité des cas, la cystocèle s'accompagne d'un prolapsus plus ou moins prononcé de l'utérus, et la hernie vaginale et surtout la rectocèle se compliquent de cystocèle et quelquefois aussi d'abaissement de la matrice.

Je ne les sépare ici que pour la clarté du discours, sachant bien que la nature ne se prête ni aux méthodes de l'art, ni aux commodités de l'écrivain.

Cystocèle vaginale.— D'après les expériences de Rognetta (1) sur le cadavre, et d'après les observations cliniques de Jobert (de Lamballe) (2), la cystocèle vaginale est produite, soit par la laxité de la paroi antérieure du vagin, soit par le relâchement des moyens d'union qui existent entre cet organe et les parties environnantes, comme, par exemple, l'aponévrose qui se prolonge du col de la vessie et de la paroi postérieure du pubis sur les côtés du vagin.

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(1) Rognetta, *Mémoire sur les prolapsus.* 1833.

(2) Jobert (de Lamballe), *Mémoires de l'Académie de médecine*, t. VIII, p. 307.

Il en doit être réellement ainsi, car la cystocèle se rencontre bien rarement chez les jeunes filles, tandis qu'on l'observe presque toujours chez les femmes qui ont eu beaucoup d'enfants ; la lenteur et les difficultés de l'accouchement ne paraissent pas avoir la même influence que le nombre des parturitions; aussi est-elle plus ordinairement l'apanage de l'âge mûr que de la jeunesse, bien qu'elle se produise, comme je l'ai dit, à une époque où les fonctions génératrices de la femme n'ont pas encore cessé.

Quoique la tumeur formée par le prolapsus de la vessie soit réductible à la suite de l'évacuation de l'urine, elle n'en constitue pas moins un obstacle, je ne dirai pas insurmontable, mais du moins fort gênant pour la copulation. Située à l'entrée du vagin, entre les petites lèvres, elle en obstrue le passage, soit par son volume propre, soit par les moyens contentifs qu'on lui oppose, tels que pessaire, éponge, etc. Aussi, en nous plaçant à notre point de vue exclusif, devons-nous accorder la préférence au traitement curatif sur les moyens palliatifs ordinairement mis en usage.

Ce traitement tout chirurgical porte, selon la cause qui a donné naissance à la hernie vaginale, tantôt sur le périnée, tantôt sur la vulve, tantôt sur le vagin, tantôt sur les deux premiers et tantôt sur tous à la fois.

Les opérations pratiquées sur le périnée et la vulve sont toujours des *anaplasties par synthèse*, tandis que celles qui intéressent le vagin, sont des *anaplasties par exérèse.*

Ces dernières se pratiquent de trois manières :

1° Par les caustiques ;

2° Par étranglement et compression mécanique des tissus ;

3° Par instrument tranchant.

Il n'entre pas dans mon plan de décrire toutes ces opérations ; il me suffit ici de les indiquer et de renvoyer le lecteur, pour de plus amples détails, aux ouvrages de médecine opératoire et au travail si remarquable de M. Emmanuel Bourdon sur les anaplasties périnéo-vaginales (1).

Cependant l'exérèse par instrument tranchant étant l'opération la plus ordinaire, depuis les travaux de Jobert (de Lamballe) et de Marion Sims, je crois devoir reproduire la partie du mémoire où Jobert expose sa méthode.

Le chirurgien se proposait de diminuer le volume de la tumeur et de donner plus de résistance à la cloison vésico-vaginale. « Je dessinai sur la tumeur, dit Jobert, au moyen du nitrate d'argent, les deux lignes transversales dont j'ai parlé, et, les attaquant à différentes reprises et à plusieurs jours d'intervalle, avec le même caustique, j'arrivai à détruire graduellement et sans aucun accident inflammatoire toute l'épaisseur correspondante du vagin. Je ne reviendrai pas sur la longueur, la largeur de ces lignes : elles avaient six lignes environ. Cela fait, il me fut facile de reconnaître la situation et l'état des parties, de raviver sans crainte avec le bistouri les bords de la surface entamée par le caustique et de laisser le fond intact. Je pus très-facilement remettre en rapport les deux plaies saignantes et les maintenir en contact au moyen de la suture entortillée (2). »

Jobert dit avoir pratiqué plusieurs fois avec succès l'opération dont je viens de faire connaître le but ; sa méthode a été plus ou moins modifiée par MM. Marion Sims, Panas, Verneuil, etc., mais le principe est toujours le même, c'est le rétrécissement du vagin. Quoique des faits assez nombreux et assez authentiques n'en démontrent ni la parfaite innocuité, ni la réussite constante, on la doit tenter, quand aucune circonstance ne la contre-indique et quand surtout la cystocèle est un obstacle insurmontable à la copulation.

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(1) Emmanuel Bourdon, *Des anaplasties périnéo-vaginales dans le traitement des prolapsus de l'utérus, des cystocèles et des rectocèles.* Paris, J.-B. Baillière et fils, 1875.

(2) Jobert (de Lamballe), *De la cystocèle vaginale opérée par un procédé nouveau.* (*Mémoires de l'Académie de médecine.* Paris, 1840, t. VIII.)

Hernie vaginale. — Rectocèle. — Quand la tumeur vaginale est constituée par le paquet intestinal, on a la hernie vaginale des auteurs, qui n'est, en réalité, que la hernie incomplète de la vulve; la rectocèle vaginale, au contraire, est formée, comme dit Sabatier, *par l'intestin rectum, qui pousse en avant la paroi du vagin sur laquelle il pose et avec lequel il a des connexions* (1).

Comme on doit le comprendre déjà, le diagnostic de ces deux espèces de hernies est très-important à établir, non pas tant peut-être au point de vue de l'impuissance de la femme, que sous le rapport de la pathologie chirurgicale; car si un bon diagnostic est la source d'où découle un bon traitement, l'art n'a, jusqu'à présent, sauf quelques tentatives d'opérations que j'exposerai plus loin, à opposer à l'une et à l'autre de ces infirmités que des moyens palliatifs qui, de leur nature, constituent eux-mêmes des obstacles à la copulation.

« La hernie vaginale, dit A. Cooper, se forme dans l'espace compris entre l'utérus et le rectum, lieu dans lequel s'engagent les intestins. Cet espace est fermé en bas par le péritoine, qui forme un cul-de-sac en se réfléchissant de la partie postérieure du vagin sur la partie antérieure du rectum. Entre ce cul-de-sac péritonéal et le périnée se trouve un tissu cellulaire lâche. La pression de l'intestin sur cette partie du péritoine la déprime en bas vers le périnée; mais plus tard, étant arrêtée dans sa marche ultérieure en ce sens, elle passe contre le vagin et pousse en avant la paroi postérieure de ce conduit (2). »

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(1) Sabatier, *Mémoires de l'Académie de chirurgie*, t. III.

(2) Ast. Cooper, *Œuvres complètes*, p. 359.

Il est incontestable que de nombreux accouchements sont une prédisposition à ce genre de hernie; mais ce n'est là qu'une prédisposition, car on a rencontré la hernie de l'intestin sur des femmes qui n'avaient jamais eu d'enfants. Les chutes sur le siége et les efforts pour soulever un fardeau sont les causes les plus ordinaires de sa formation.

La hernie vaginale présente quelquefois un volume extraordinaire, est facilement réductible, arrondie et à large base, et peut, par la pression qu'elle exerce sur la rectum et le canal de l'urèthre, amener la constipation et la difficulté d'uriner.

La rectocèle vaginale est la tumeur que l'on a le plus confondue avec les procidences de la matrice, et principalement avec celles du vagin; il n'est pas d'une exactitude scrupuleuse de lui donner le nom de hernie, car elle ne renferme pas une anse du rectum, à l'exemple des hernies ordinaires, qui contiennent une anse du petit ou du gros intestin. Dans la rectocèle, la paroi postérieure du rectum n'est pas déplacée; elle est toujours adhérente au sacrum par l'aponévrose pelvienne; ce n'est que la paroi antérieure, et encore une portion de cette paroi, qui subit des modifications qui la constituent à l'état de hernie.

D'après Malgaigne (1), qui a vérifié toutes les assertions de Clarke et de Monteggio, il est assez difficile d'assigner à la rectocèle une cause à peu près certaine. Les chutes, les efforts, les grossesses répétées, etc., ne paraissent pas expliquer, dans tous les cas, le prolapsus du rectum, et l'on est forcé d'admettre que l'affection arrive bien souvent, comme les hernies abdominales, sans cause connue.

Le volume de la tumeur est essentiellement variable; il peut n'être représenté que par un pli de la muqueuse vaginale et aller jusqu'à la grosseur du poing.

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(1) Malgaigne, *Mémoire sur un prolapsus particulier du rectum dans le vagin et à travers la vulve.* (*Mémoires de l'Académie royale de médecine.* Paris, 1838, t. VII.)

Les accidents que la rectocèle vaginale détermine sont surtout remarquables du côté des voies digestives ; il faut que la hernie ait atteint un certain volume pour empêcher la copulation.

Le toucher anal et les troubles de la digestion font toujours distinguer le prolapsus du rectum de la cystocèle et de la procidence de la matrice et du vagin.

Ainsi que je le disais plus haut, la médecine n'a guère eu pendant longtemps à opposer à la hernie vaginale et à la rectocèle que des palliatifs, c'est-à-dire des moyens de contention dont les pessaires faisaient ordinairement la base. Mais des tentatives avaient été faites plus d'une fois pour amener la cure radicale de l'une et de l'autre de ces infirmités : ainsi, on parle (1) d'une opération pratiquée par Petrunti contre la hernie vaginale ; mais ce fait est révoqué en doute, et surtout par Velpeau, qui dit très-explicitement que la prétendue hernie vaginale opérée par le chirurgien italien pourrait bien n'avoir été qu'un abcès recto-vaginal (2). De même encore Malgaigne rappelle, dans le Mémoire que j'ai déjà cité, qu'il a reproduit (3) une opération tentée par Bellini (de Florence) pour une rectocèle du volume d'un gros œuf de poule ; mais il ajoute que, pour lui, cette rectocèle n'était autre chose qu'un prolapsus vaginal.

Dans ces derniers temps, la chirurgie a été plus hardie, et en Allemagne et en France on a tenté, non sans quelques succès, la cure radicale de cette infirmité.

Les procédés opératoires sont exactement les mêmes que ceux que j'ai indiqués pour le traitement de la cystocèle : ce sont des anaplasties par synthèse quand elles portent sur le périnée ou la vulve, et des anaplasties par exérèse quand elles s'adressent au vagin. Ces dernières, lorsqu'elles sont possibles, ont la préférence des opérateurs ; M. Mollière, chirurgien de l'Hôtel-Dieu de Lyon, est d'avis que l'anaplastie contre la rectocèle vaginale est praticable, qu'elle n'offre aucune gravité et que toujours elle doit être tentée.

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(1) *Gazette médicale de Paris*, 1826, p. 424.

(2) Velpeau, *Médecine opératoire*, 2e édit. Paris, 1839, t. IV, p. 214.

(3) *Gazette médicale*, 1836, p. 200.

A l'appui de son opinion, M. Mollière rapporte une opération qu'il a pratiquée, avec plein succès, sur une femme âgée de cinquante-quatre ans et qui portait, faisant saillie à la vulve, une tumeur du volume d'une orange mandarine.

Le fait nous intéresse assez pour que nous reproduisions au moins le mode opératoire dont a fait usage M. le docteur Mollière.

« La malade, dit-il, étant anesthésiée avec l'éther et couchée sur le dos, les jambes écartées et confiées à des aides, j'introduisis dans le rectum un pessaire Gariel qui fut gonflé de manière à distendre la poche morbide et à la faire saillir hors de la vulve, comme pendant les efforts de défécation. Cela fait, je disséquai au bistouri sur la partie saillante de cette tumeur un lambeau ovalaire de 5 à 6 centimètres de longueur sur 3 à 4 de largeur. Ce lambeau fut excisé ; il comprenait toute l'épaisseur de la muqueuse vaginale et en grande partie celle du tissu cellulaire qui la double. Grâce au pessaire introduit dans le rectum et qui me servait de guide, je pus laisser parfaitement intacte la muqueuse de ce viscère.

» Tout ce premier temps de l'opération a pu être accompli sans hémorrhagie sérieuse ; je n'ai eu à arrêter qu'une seule petite artériole, qu'il m'a suffi de tordre.

» Les bords de cette large perte de substance furent ensuite réunis longitudinalement à l'aide de trois points de suture enchevillée et trois points de suture métallique plus superficiels (c'est également à l'aide de fils métalliques que la suture enchevillée avait été pratiquée).

» De larges doses d'opium furent administrées, de manière à suspendre absolument le cours des matières pendant les premiers jours. Il n'y eut pour ainsi dire pas de réaction générale, et si, pendant les cinq ou six premiers jours, la malade accusa de la céphalalgie, de l'inappétence, c'est bien plus aux doses d'opium administrées qu'à la fièvre traumatique qu'il le faut attribuer, car jamais la température ne s'est élevée à un degré réellement pyrétique.

» J'abandonnai absolument aux soins de la nature l'élimination des fils qui avaient réuni la plaie, me bornant à faire pratiquer quelques injections vaginales avec de l'eau tiède.

» Le dixième jour, tous les fils étaient tombés et l'on pouvait voir sur la face postérieure du vagin une cicatrice linéaire. J'avais obtenu la réunion de la plaie sans suppuration, la réunion par première intention.

» A partir de ce moment, la guérison a été complète. J'ai néanmoins fait administrer des injections rectales avec l'extrait de ratanhia pendant plusieurs jours, et quand la malade a quitté l'hôpital, je lui ai recommandé l'usage de fréquentes injections froides dans le rectum (1). »

Le succès de cette opération, rapproché des faits heureux que rapporte M. Bourdon dans sa thèse inaugurale (2), doit engager les chirurgiens à persévérer dans une voie où jusqu'à présent ils avaient rencontré de nombreux revers. Ce serait une véritable conquête, car jusqu'à ce jour nous n'avions à opposer à cette infirmité que des palliatifs, qui augmentaient encore les obstacles à la copulation.

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(1) Daniel Mollière, *Lyon médical*, 1875, n° 19.

(2) Emmanuel Bourdon, *Des anaplasties périnéo-vaginales dans le traitement des prolapsus de l'utérus, des rectocèles et des cystocèles*. Paris. 1875.

CORPS ÉTRANGERS DE L'APPAREIL COPULATEUR

Il est bien évident qu'il ne peut s'agir ici que des corps étrangers introduits dans le vagin, car ceux qui seraient appliqués sur la vulve seraient, ou sous la dépendance de la volonté de la femme, et par conséquent l'empêchement au coït reconnaîtrait une cause tout à fait étrangère à l'organisme, ou sous la dépendance d'une volonté autre que celle de la femme, mais plus forte qu'elle. Dans ce dernier groupe viendrait se placer l'infibulation, si cette méthode barbare de garder la virginité des filles et l'honneur des femmes n'était pas frappée de toute la réprobation qu'elle mérite, et si je ne m'étais pas interdit toute excursion en dehors du domaine de la médecine proprement dite (1).

Je n'aurais donc, ainsi que je le disais tout à l'heure, qu'à m'occuper des corps étrangers introduits dans le vagin.

L'examen comparatif des accidents que peut amener l'introduction d'un corps étranger dans la cavité vaginale, au point de vue de l'impuissance et de la stérilité de la femme, mérite, à coup sûr, une certaine attention, car les faits de ce genre se présentent fréquemment dans la pratique, depuis surtout que l'on fait un usage presque abusif des pessaires.

Il est incontestable que certains corps étrangers introduits dans le vagin n'occasionnent ni impuissance ni stérilité, et bien plus, que leur présence facilite au contraire la fécondité de la femme. Il m'est plus d'une fois arrivé d'introduire une éponge dans le vagin pour atteindre ce résultat, soit que je voulusse modifier momentanément la direction du col utérin, soit que je me proposasse de déterminer sur cet organe une excitation indispensable à la fécondation, comme je le dirai ailleurs, et qui faisait défaut.

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(1) On lira avec plaisir sur ce sujet un petit livre, très-recherché par les bibliophiles : *Plaidoyer de M. Freydier contre l'introduction de cadenas, ou ceintures de chasteté*. Montpellier, Rochard, 1750, petit in-8. — Réimprimé à 100 exemplaires par Jules Gay, 1863. Même format.

Je n'ai donc pas à m'occuper ici de cette classe de corps étrangers.

Il en est d'autres qui, sans empêcher la fécondation, s'opposent complétement, ou tout au moins d'une manière douloureuse, au rapprochement des sexes ; de ce nombre est la très-grande majorité des pessaires, surtout s'il existe un prolapsus de la matrice assez prononcé et une laxité des parois vaginales assez grande pour laisser couler l'instrument contenteur, et par suite pour ne plus permettre à celui-ci de soutenir la matrice.

D'autres enfin, en obstruant complétement la cavité vaginale, déterminent tantôt la stérilité seulement et tantôt l'impuissance et la stérilité, suivant la hauteur à laquelle le corps étranger est arrêté.

Comme on le voit, la distinction est importante à faire, non sous les rapports de l'étiologie et du traitement, mais au point de vue des symptômes et surtout des accidents divers que peut entraîner la présence de ces corps étrangers.

Les motifs qui amènent l'introduction d'un corps étranger dans le vagin sont nombreux et variés ; tantôt, comme je le disais plus haut, c'est le médecin lui-même qui a placé un pessaire, une éponge ou tout autre objet qui, oublié par la malade, séjourne dans l'organe pendant un temps quelquefois très-long ; tantôt c'est une pensée de luxure, l'appât du plaisir vénérien qui a sollicité l'introduction dans la cavité vaginale d'un corps quelconque, et qui, au moment du spasme cynique, comme disaient les anciens, a échappé des mains de la femme et est resté dans l'appareil copulateur, protégé par un sentiment de honte ou de pudeur ; tantôt enfin la présence du corps étranger dans le vagin est le résultat d'un acte criminel ou de brutalité, comme dans le fait, observé par Dupuytren, de cette fille de la campagne, qui portait un petit pot dont la concavité regardait le col de l'utérus, et qui avait été placé là par des soldats, après le viol commis par eux sur la jeune fille.

Quel que soit le motif qui ait amené le corps étranger dans le vagin, il est incontestable que sa présence s'oppose plus ou moins à l'entier accomplissement de la fonction génitale. Je ne parle pas des autres accidents pathologiques qui en peuvent résulter, tels que la douleur, l'inflammation, la déchirure, la gangrène même des parois vaginales, car je me dois renfermer dans le cadre de ma thèse.

A ce point de vue exclusif, la présence du corps étranger peut ne rendre que le coït, ou impossible, ou simplement douloureux, sans empêcher la fécondation; ou bien, tout en étant un obstacle plus ou moins absolu à la copulation, il peut, en même temps, s'opposer à l'arrivée du sperme dans l'utérus, et par conséquent rendre impossible l'imprégnation.

On conçoit très-bien, en effet, que si le col de l'utérus abaissé s'engage dans un pessaire, le congrès sera incomplet, douloureux pour la femme, dont le museau de tanche aura à supporter les chocs de la verge, et pénible pour l'homme, dont le gland viendra heurter les parois endurcies du pessaire; mais, malgré ces circonstances défavorables au plaisir, rien n'empêchera le sperme de venir frapper le museau de tanche, de pénétrer dans l'utérus sans qu'il soit arrêté par la tuméfaction que présente ordinairement, en semblable occurrence, le col de la matrice, et d'accomplir l'acte de la fécondation.

Dans l'observation de Dupuytren, la femme était fatalement condamnée à une stérilité d'une durée plus ou moins longue, puisque l'ouverture intérieure de l'utérus était entièrement soustraite à l'action de la liqueur spermatique.

La thérapeutique des corps étrangers du vagin est basée sur les principes généraux de la médecine opératoire des corps étrangers en général. — Je ne dois donc pas m'y arrêter ici.

— Seulement je ferai remarquer que dans certaines circonstances cette extraction est entourée des plus grandes difficultés, parce que très-souvent des concrétions se forment sur le corps étranger et en empêchent le glissement, et parce qu'aussi quelquefois des végétations fongueuses se développent sur la muqueuse, s'étendent jusque sur le corps étranger, et lui constituent ainsi des liens qui le retiennent en place. Dans d'autres cas, le corps étranger a perforé la paroi vaginale, a pénétré dans la vessie ou le rectum, et c'est alors par ces organes que l'on est obligé de l'extraire.

Comme on le voit, la conduite du chirurgien ne peut être réglée d'avance; elle devra s'inspirer des circonstances relatives à la nature, à la position du corps étranger, aux complications qui l'accompagnent et aux désordres qu'il a déjà produits.

DIVISION DEUXIÈME.

IMPUISSANCE PAR FRIGIDITÉ.

D'après les lois de la nature, la femme, pas plus que l'homme, ne doit être inactive pendant le coït : comme chez lui, la volonté est nécessaire pour la réalisation de cet acte, car la réception de la verge dans le vagin ne constitue pas, ainsi que je l'ai dit plusieurs fois, le coït physiologique; mais pour que cette volonté ne fasse pas défaut, pour qu'elle seconde et favorise le rapprochement, il faut qu'un attrait puissant la décide, qu'une suprême récompense, pour ainsi dire, soit attachée à son acquiescement; cet attrait c'est le désir, cette récompense c'est la volupté.

Le désir et la volupté sont donc des conditions du coït normal chez la femme, et par conséquent leur absence constitue un état antiphysiologique dont les conséquences, hâtons-nous de le dire, sont préjudiciables plutôt aux liens conjugaux qu'à la santé générale de la femme et qu'à l'acte de la procréation.

Mais de ce que la frigidité n'altère aucune des fonctions nécessaires, soit à l'entretien de la vie, soit à la propagation de l'espèce, il n'en faut pas déduire que cet état anormal est indigne de l'attention du médecin et des méditations du philosophe. Indifférente d'abord pour un acte vers lequel ne la sollicite aucun attrait, la femme froide finit toujours par passer de l'indifférence à la répulsion, surtout après une ou plusieurs grossesses, dont le plaisir ne lui fait oublier ni les ennuis ni les douleurs; alors cette répulsion, mal comprise ou mal interprétée par le mari, engendre entre les deux époux des querelles et des luttes qui brisent quelquefois le nœud conjugal, mais qui retentissent toujours plus ou moins fortement sur le caractère de la femme et le bonheur du foyer domestique. Le médecin est souvent consulté pour cette infirmité, et l'excuse de ce recours à la science est, il faut le reconnaître, bien moins dans le plaisir que dans la paix du ménage.

Deux puissants motifs militent donc en faveur de l'étude et de la guérison de cet état, que tout autorise à appeler morbide; en y obéissant, le médecin accomplit une double mission sociale : celle de favoriser la propagation de l'espèce, et celle de sauvegarder la base de toute société, le mariage.

Il n'est pas dans mon rôle de m'appesantir davantage sur l'intérêt que présente, au point de vue social, la frigidité de la femme, qui, sous ce rapport, a presque toute la valeur de l'impuissance chez l'homme; il a dû me suffire d'indiquer cet important côté de la question, afin de me faire pardonner la sollicitude avec laquelle j'ai étudié cet état, s'il était besoin de justifier cette sollicitude de la part de la médecine, lorsqu'il s'agit d'une infraction aux lois physiologiques de notre nature.

Je reviens donc à la partie purement médicale du problème.

Mais pour bien comprendre l'étiologie si mal connue de la frigidité, il faut se rapporter à ce que j'ai dit ailleurs (1) sur le mécanisme du plaisir chez la femme, et se rendre bien compte du rôle que jouent, d'une part, les bulbes du vagin, et d'autre part le clitoris.

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(1) Voyez la page 13.

Je vais, pour l'intelligence de ce qui va suivre, rappeler ce mécanisme en deux mots : anatomiquement et physiologiquement, les bulbes du vagin sont les analogues du bulbe de l'urèthre chez l'homme, et le clitoris est, comme la verge, pourvu d'un gland et de corps caverneux dont la base communique, au moyen de veines nombreuses, avec les bulbes du vagin, ainsi que l'ont démontré les injections faites par Kobelt (1), Jarjavay (2) et Deville.

Sous l'influence des désirs érotiques, les bulbes se gorgent de sang et envoient ce liquide en plus grande quantité, par le réseau intermédiaire, aux corps caverneux et au gland du clitoris; la sensibilité de celui-ci, accrue de cette facon, se réfléchit avec plus d'intensité sur le *constrictor cunni*, muscle symétrique qui, semblable au bulbo-caverneux chez l'homme, recouvre et comprime dans ses contractions les bulbes du vagin.

Ainsi, pour que l'éréthisme vénérien, et, par suite le plaisir, se produise chez la femme, il faut l'intégrité et le libre exercice des organes suivants : 1° bulbes du vagin et leur muscle, le *constrictor cunni;* 2° le réseau intermédiaire; 3° enfin le clitoris, surtout sa partie libre, c'est-à-dire le gland.

La distinction que je viens de faire n'est pas une simple curiosité anatomique; elle est, comme on le verra plus loin, d'une importance extrême pour l'étiologie de la frigidité; c'est à elle, en effet, que je dois de m'être rendu compte, dans plusieurs circonstances, d'une absence de plaisir vénérien qu'aucune lésion du clitoris ne pouvait expliquer; ainsi, et pour n'en citer qu'un exemple afin de ne pas empiéter sur l'étude qui va suivre, j'ai rencontré des femmes qui, à la suite d'un accouchement laborieux et pendant lequel la vulve avait plus ou moins souffert, perdaient tout sentiment voluptueux, sans que le clitoris présentât la moindre trace d'altération. — Ces cas ne sont pas -rares. — La frigidité persiste plus ou moins ongtemps ; tantôt la sensibilité érotique est complétement et pour toujours éteinte, et tantôt, après une suspension dont la durée est très-variable, elle reparaît sans cause connue, et sans qu'aucune médication ait été tentée pour la rappeler. Dans ces cas, moins rares qu'on ne pense, je le répète, on trouve, dans une lésion des bulbes, et plus souvent encore dans la déchirure du *constrictor cunni*, l'explication de ce trouble que, dans leur ignorance, les auteurs qui m'ont précédé mettent volontiers sur le compte de la syncope génitale, d'une névrose, et voire même sur celui de la paralysie du clitoris.

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(1) Kobelt, *De l'appareil du sens génital des deux sexes*, traduit de l'allemand par Kaula, Strasbonrg-Paris, 1851, p. 78 et suiv.

(2) Jarjavay, *Traité d'anatomie chirurgicale*, t. I, p. 310.

C'est à ce défaut, je dirai même à cette absence de tout diagnostic différentiel, que la frigidité doit d'être abandonnée par les médecins comme incurable, et partant comme indigne de leurs méditations. Aussi ai-je trouvé bien peu de chose chez mes devanciers ; ils m'ont laissé un champ tout en friche et dans lequel j'ai essayé de tracer quelques sillons.

Comme chez l'homme, l'appareil sensitif de la copulation, chez la femme, est mis en jeu par le *consensus* érotique, sous l'empire des désirs.

Ceux-ci peuvent manquer ou être détournés de leur but ; alors la frigidité est purement morale, et est caractérisée par l'absence ou la perversion des désirs vénériens.

Tantôt, au contraire, les désirs existent, mais, par suite de quelque trouble organique, général ou local, ils ne peuvent réagir sur la sensibilité de l'appareil copulateur, et alors la frigidité est toute physique et rentre plus particulièrement dans notre domaine.

Enfin, le consensus érotique et la sensibilité copulatrice peuvent simultanément faire défaut; alors la frigidité est complète, elle est tout à la fois morale et physique.

Cette dernière variété n'exige pas une étude spéciale, car son histoire est comprise dans celle de la frigidité organique et dans celle de la frigidité morale.

Ces deux dernières doivent seules m'occuper, la première surtout, qui rentre plus spécialement dans le domaine de la médecine.

Ainsi que je l'ai fait pour l'impuissance chez l'homme, je considérerai la frigidité au point de vue de son étiologie, et j'admettrai les cinq divisions suivantes :

1° Frigidité organique par vices de conformation;
2° Frigidité organique idiopathique;
3° Frigidité organique symptomatique;
4° Frigidité organique consécutive;
5° Enfin frigidité morale.

CHAPITRE PREMIER

FRIGIDITÉ PAR VICES DE CONFORMATION

La seule anomalie dont il sera ici question est l'absence ou tout au moins la petitesse extrême du clitoris. L'absence complète du clitoris, avec la parfaite conformation de la vulve, est excessivement rare; je ne l'ai jamais observée et n'en ai pas trouvé des exemples chez les auteurs.

Mais il n'en est pas de même de l'arrêt de développement que peut éprouver cet organe, et dont l'existence n'est pas fatalement liée à celle d'un vice de conformation de la vulve. J'ai rencontré des clitoris réduits à des volumes microscopiques sans qu'une autre partie de l'appareil génital présentât quelque malformation. Si, dans ces cas, toute sensibilité érotique n'est pas éteinte, on est en droit de penser qu'elle est au moins considérablement affaiblie, et que celle du clitoris en particulier est singulièrement obtuse.

Cependant, quand on réfléchit au rôle que jouent le tissu érectile qui entoure le vagin et les bulbes qui se trouvent à l'entrée du canal, on ne peut raisonnablement admettre une insensibilité complète ; j'ai vu, en effet, des femmes avec un clitoris excessivement petit ne pas rester entièrement froides aux caresses de l'homme.

Sans doute ces femmes n'ont ni les instincts, ni les fureurs d'une Messaline ; elles sont lentes à s'émouvoir, manifestent peu de désirs, et n'entrent en jouissance qu'à la longue et par des manœuvres savamment conduites ; mais, à la fin, le plaisir s'éveille, et c'est de cette classe de femmes que l'on peut dire que, bien souvent, le coït commencé avec indifférence et même avec dégoût, se termine dans la volupté.

Évidemment une thérapeutique essentiellement médicale n'a que faire en pareilles circonstances : si le clitoris manque entièrement, l'art ne peut se compromettre dans une plastique où la vie et la sensibilité feraient défaut ; et si l'organe n'est qu'arrêté dans son développement, l'intervention médicale, alors qu'elle est appelée, n'offre guère plus d'avantages, car on ne s'aperçoit d'ordinaire d'une pareille infirmité qu'à un âge où les atrophies sont au-dessus des ressources de l'art.

Cependant, en vertu de cette loi physiologique qui nous apprend qu'un organe se développe en proportion directe de son usage, on peut essayer les excitations érotiques, soit morales, soit physiques ; mais il importe de n'oublier jamais, dans l'emploi de ces moyens, les devoirs que la société et la morale imposent à la pudeur de la femme. Aussi le médecin doit-il être très-circonspect et ne manier qu'avec la plus grande prudence cette arme dangereuse, l'excitation cynique chez la femme.

CHAPITRE II.

FRIGIDITÉ ORGANIQUE IDIOPATHIQUE

En parlant de l'impuissance idiopathique de l'homme, j'ai dit que chez ce dernier la syncope génitale, dégagée de toute lésion organique locale et de toute affection générale, était rare ; mais bien plus rare encore est la frigidité idiopathique chez la femme; cette différence s'explique tout à la fois et par la simplicité du rôle que la femme remplit dans le coït, et par la moindre complication de son appareil copulateur, ou plutôt de son appareil sensitif de la génération. Pour mon compte, je n'ai jamais vu cette variété de frigidité, et n'en ai point trouvé d'exemples dans les auteurs; toujours, quand une femme m'a avoué ne pouvoir prendre part aux plaisirs de la couche conjugale, j'en ai trouvé la cause, soit dans des circonstances morales, soit dans des conditions générales ou locales de l'appareil copulateur.

Cependant la théorie permet d'admettre cette sorte de frigidité, et l'on conçoit très-bien que le clitoris puisse être frappé de paralysie essentielle, ou même simplement d'un engourdissement plus ou moins prolongé de sa sensibilité. Dans ce cas, et si un pareil fait se présentait à mon observation, j'estime, en jugeant par analogie, que l'électricité serait le moyen tout à la fois le plus rationnel et le plus avantageux. Mais, je le répète, sans appui et sans preuves en cette matière, je ne puis que fournir des hypothèses qui, ne reposant sur aucun fait clinique, n'ont évidemment qu'une valeur minime.

CHAPITRE III

FRIGIDITÉ ORGANIQUE SYMPTOMATIQUE

Comme l'impuissance chez l'homme, la frigidité de la femme est symptomatique, tantôt d'un état physiologique, comme l'âge, la constitution, le tempérament, et tantôt d'un état morbide, soit général, soit local.

C'est à ce double point de vue que je vais successivement me placer.

§ I. — Frigidité symptomatique d'un état physiologique.

1° *Age.* — Il est incontestable, par le fait de la masturbation chez les petites filles et par les exemples de lascivité que présentent quelques vieilles femmes, que la sensibilité génitale du sexe n'est pas entièrement sous la dépendance de la menstruation (1). Mais cette sensibilité, pour être plus exquise et plus délicate que la sensibilité générale tactile, est-elle cette sensibilité voluptueuse, *sui generis*, et seul apanage de l'amour?

Sans doute, en restant dans les limites de la théorie, le vrai plaisir vénérien, la vraie sensibilité amoureuse et la véritable volupté érotique ne doivent exister ni avant, ni après l'âge de la menstruation, puisqu'ils ne sont que les incitateurs à la propagation de l'espèce, et que cette propagation ne peut se produire que pendant la vie menstruelle de la femme.

Cependant quand on aborde le domaine de l'observation, on est forcé de se départir d'une théorie aussi rigoureuse, et, en présence de faits bien authentiques et bien avérés, on se demande si le plaisir vénérien, dans l'espèce humaine, n'est pas tout à la fois un moyen de sociabilité et un aiguillon à la génération.

Ce n'est point ici le lieu d'aborder un semblable problème, dont on trouvera la solution plus loin, alors que j'examinerai l'influence exercée sur le sens érotique par l'absence de l'utérus et des ovaires.

2° *Constitution.* — On se tromperait grandement si l'on croyait qu'une mauvaise constitution est une cause de frigidité pour la femme; bien souvent, dans les organismes délabrés et cacochymes, la vie paraît se retirer tout entière dans le système nerveux, qui est alors d'une susceptibilité excessive e d'une impressionnabilité étrange. Si, dans ces circonstances, la femme vit au milieu du luxe et de la paresse, si elle s'abandonne à la lecture des romans, fréquente les théâtres, les bals, les musées, etc., etc., si elle s'expose à l'empire énervant d'une civilisation raffinée, toutes ces excitations retentissent profondément sur les organes de la génération, et la sensibilité érotique s'accroît de tous les désordres du système nerveux et de tous les écarts de l'imagination.

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(1) Dans tous le cours de cet ouvrage, le mot *menstruation* doit être pris comme synonyme d'évolution ovarienne dont l'hémorrhagie menstruelle est le principal symptôme.

Cependant toutes les constitutions frêles et délicates ne présentent pas cette excitabilité excessive, et il en est chez lesquelles toutes les sources de la vie coulent avec une lenteur et une mollesse désespérantes. A peine assez fortes pour se suffire à elles-mêmes, pour retenir le faible souffle qui les anime, ces créatures languissantes ne peuvent perpétuer l'espèce, ni communiquer à autrui une vitalité qui leur échappe, car la nature, toujours prévoyante, même dans les malheurs dont elle nous afflige, leur refuse les désirs qui sollicitent, et les plaisirs qui récompensent l'acte de la reproduction.

N'essayez pas, par des excitations intempestives, de contrarier les desseins de la nature; vous n'arriveriez qu'à fatiguer davantage et à briser même les faibles ressorts qui soutiennent la machine; que tous vos soins, que toute votre sollicitude se bornent à augmenter l'élasticité du ressort et la résistance de l'organisme; avec les forces, avec le développement osseux et musculaire, avec l'accroissement de l'innervation, en un mot avec l'énergie vitale, le sens génital apparaîtra, riche de ses attributs, c'est-à-dire avec ses désirs et sa sensibilité.

3° *Tempérament.* — Les anciens, dont les sagaces observations se cachaient souvent sous les allégories les plus ingénieuses, admettaient quatre tempéraments, qu'ils faisaient correspondre aux quatre âges de la vie, aux quatre saisons de l'année et aux quatre climats du globe : ainsi le tempérament sanguin était l'apanage de la jeunesse, du printemps et des pays tempérés; le tempérament bilieux concordait avec l'âge adulte, avec l'été et les climats chauds; le tempérament atrabilaire était l'analogue de l'âge mûr, de l'automne et des pays équatoriaux; enfin le tempérament pituiteux correspondait à la vieillesse, à l'hiver et aux pays humides et froids.

Il n'est pas, à coup sûr, de façon plus ingénieuse de caractériser les aptitudes génésiaques des divers tempéraments, et de dresser leur échelle de gradation, en les comparant aux influences exercées par les âges, les saisons et les climats sur les manifestations de l'amour (1).

Cependant il faut se garder d'accepter dans toute leur rigueur de semblables rapprochements, car si la vieillesse est complétement insensible aux excitations vénériennes, les habitants des pays froids ne sont pas déshérités de tout plaisir érotique, même pendant l'hiver.

Cette distinction nous amène naturellement à une question qui n'est pas sans importance, à savoir s'il existe des tempéraments complétement froids, c'est-à-dire si l'absence absolue de désirs et de plaisirs vénériens peut, d'une manière exclusive, être le résultat du tempérament; en d'autres termes, si un tempérament quelconque peut, sans devenir *état morbide*, être, comme la vieillesse, une cause absolue de frigidité, ou s'il ne constitue, ainsi que l'hiver et les climats froids, qu'une prédisposition à l'allanguissement de la fonction génitale.

Toute question posée carrément exige une réponse catégorique. — Oui, je crois qu'il est des femmes complétement froides par tempérament, qui, sans préoccupations intellectuelles, sans contre-indications morales, sans maladie locale ou

(1) Voir les pages 67 et suiv., et 79 et suiv

générale, en un mot sans aucun de ces mille motifs, moraux, sociaux ou physiques, qui paralysent le sens copulateur, n'ouvrent leur âme à aucun désir et leurs sens à aucune volupté. — Sans doute, cette insensibilité complète, absolue, est plus rare qu'on ne pense, et l'on rencontre souvent des femmes qui doivent leur frigidité soit à la maladresse de leur mari, soit au défaut d'harmonie entre leurs mutuelles excitations. Mais pour être peu commune, l'entière frigidité par vice de tempérament existe bien réellement, je le répète, et ce fait, à défaut de diagnostic infaillible, trouve une nouvelle confirmation dans le succès de la médication mise en usage.

Les femmes dont l'instinct génital ne s'est pas éveillé à l'âge de la puberté, et celles même chez lesquelles les manifestations de cet instinct sont languissantes et paresseuses, présentent un ensemble de phénomènes qui les fait toujours facilement reconnaître. Ces phénomènes, pour la plupart du moins, pris isolément, n'ont pas constamment une valeur certaine, et l'on s'exposerait à des erreurs graves et nombreuses, si l'on appréciait l'ardeur érotique d'une femme sur un seul de ces signes; ainsi, par exemple, une menstruation peu abondante, déréglée et à sang pâle, est notée par tous les auteurs comme un symptôme de frigidité, et pourtant j'ai vu des femmes très-ardentes au plaisir chez lesquelles les règles n'apparaissaient que de loin en loin et en quantité presque insignifiante; j'en ai même connu une entièrement privée de menstrues, et dont les désirs insatiables amenaient, quand ils étaient satisfaits, une véritable crise nerveuse.

Il faut donc, avant de se prononcer sur les dispositions érotiques d'une femme, étudier, non-seulement les manifestations extérieures de son organisation, mais encore le degré d'énergie de la vitalité qui se trahit toujours dans les habitudes du corps et dans les sentiments de l'âme.

Tous les attributs du tempérament lymphatique dominent ordinairement chez les femmes froides par tempérament. Je n'ai point ici à les passer en revue; seulement, je noterai que le système pileux joue un rôle assez important pour fournir à lui seul des signes à peu près certains. Tout ce système est remarquable par la langueur de sa vitalité : les cheveux sont blonds, fins, clairsemés et plats; ils n'offrent point, comme dans les natures ardentes, de petites touffes frisées sur les tempes, et subissent plus que tout autre l'influence hygrométrique de l'atmosphère; les sourcils, pâles et à peine distincts de la peau transparente qui les supporte, laissent entre eux, à la racine du nez, un espace considérable, et ne recouvrent pas, dans une grande étendue, l'arcade sourcilière; les aisselles, quoique facilement baignées par une sécrétion nauséeuse des follicules sébacés, n'offrent que quelques rares poils à couleur douteuse et à consistance nulle; enfin, le pubis, à travers un duvet court, pâle et décoloré, laisse plutôt deviner que voir un mont de Vénus dont la maigreur et l'aridité sont un épouvantail pour la volupté.

Sans doute ces caractères en quelque sorte passifs du système pileux ne sont pas constamment et à coup sûr des signes irréfragables de frigidité; mais ils en constituent certainement un indice probable, surtout s'ils concordent avec les autres attributs physiques du tempérament lymphatique, avec un allanguissement dans les facultés intellectuelles, et avec une certaine apathie dans les affections de l'âme.

Cependant, de ce que ces caractères signalent presque toujours sinon une frigidité absolue, du moins un affaiblissement dans les facultés voluptueuses, il n'en faut pas conclure que la frigidité complète ou incomplète s'accompagne fatalement de cette physionomie. Le tempérament lymphatique n'est pas le seul à produire cet état; il en est un autre, peu étudié par les physiologistes, qui tire ses attributs plutôt de la nature intellectuelle que de la nature physique de la femme, et que, pour ces motifs, j'appelle *tempérament intellectuel.*

Pour caractériser ce tempérament, je ne puis mieux faire que de rappeler ce que me disait un jour une femme d'infiniment d'esprit. Elle disputait à une rivale heureuse la possession d'un homme, non pour les plaisirs que l'amour pouvait lui procurer, mais pour la position sociale, c'est-à-dire pour le mariage, dont cet amour pouvait être la conséquence. D'un tempérament sanguin, d'une beauté rare, d'une amabilité peu commune, elle était en tout supérieure à sa rivale qui, néanmoins, avait le grand avantage d'être aimée. La lutte s'établit entre ces deux femmes; d'un côté, le cœur, le dévouement, l'amour ; de l'autre, la beauté, l'adresse et l'esprit. « Je suis la plus forte, me disait un jour celle des deux femmes dont les prétentions étaient le résultat d'un calcul ; mes sens et mon cœur sont là, ajouta-t-elle en frappant son front, et la tête est bonne... » Oui, les *femmes de tête*, comme dit le vulgaire, chez lesquelles la raison domine en souveraine, sont souvent insensibles aux charmes d'une douce liaison et aux enivrements de l'amour. Physiquement, rien ne décèle cette froideur ; j'ai même connu des femmes qui la cachaient sous les apparences d'une nature passionnée et sous les attributs d'un tempérament fougueux. Ce n'est que dans les mœurs, la tournure d'esprit de ces femmes, qu'il est possible de pénétrer les conditions d'une semblable insensibilité. Presque toujours ces personnes ont quelque chose de viril dans le caractère, une volonté ferme et un jugement qui ne s'inspire pas de la timidité de leur sexe ; ces attributs de leur nature morale donnent à leur démarche et à leurs mouvements une sûreté et une fierté qui ne sont pas ordinairement l'apanage de la femme, et pourtant elles ne portent pas les signes de ces *virago* dont parle le poëte ; leurs formes sont élégantes et arrondies ; leur beauté, quoique mâle, n'a rien de dur et de viril ; leurs manières sont séduisantes, leur voix est douce; en un mot, elles sont complètement femmes, et n'ont pas, comme les *virago*, les penchants obscènes de la tribade; elles éprouvent, non de l'aversion, mais une froide indifférence pour les plaisirs vénériens, quelle que soit d'ailleurs la source d'où ces plaisirs découlent.

La menstruation ne fournit pas de signes plus certains que les autres habitudes du corps ; quelquefois elle paraît moins abondante qu'elle ne semblerait l'être; mais il est difficile, pour ne pas dire impossible, de rien préciser à cet égard, tant la quantité des menstrues varie avec chaque femme ; seulement, cette fonction est constamment remarquable par sa régularité, que l'on attribuerait volontiers à l'absence de toute excitation génésiaque.

Les seins n'offrent également rien de particulier ; les glandes mammaires acquièrent leur développement normal et subissent les influences ordinaires qu'exercent sur elles la menstruation et la grossesse; car, disons-le par anticipation, la frigidité, quel qu'en soit le motif, n'est jamais une cause de stérilité.

Je le répète, ce n'est point à des signes physiques que se reconnaît la froideur dont je parle; il en faut chercher les manifestations dans les mœurs, les habitudes et le caractère moral de la femme, quoique ces circonstances n'aient pas toujours par elles-mêmes une valeur bien grande, et, dans la majorité des cas, s'en rapporter aux aveux de la malade qui, en les faisant à un médecin, ne peut guère être soupçonnée de supercherie.

On s'étonnera peut-être de me voir placer ici cette forme de frigidité, et l'on se demandera si son étude n'eût pas mieux figuré dans le chapitre relatif à la frigidité idiopathique ou dans celui que je consacrerai tout à l'heure à la frigidité par cause morale. Qu'on me permette un mot d'explication qui fixera en même temps l'étiologie de l'état que j'examine.

Cette forme de frigidité ne pouvait entrer dans le cadre de la frigidité idiopathique, parce qu'elle est la manifestation, je pourrais presque dire le symptôme d'un état parfaitement défini, à savoir, la prédominance de l'élément intellectuel.

Elle ne devait pas non plus trouver place à côté de la frigidité par cause morale, parce que, ainsi que nous le verrons en temps et lieu, cette dernière est tout à la fois passagère et relative, tandis que la frigidité dont il est ici question est permanente, absolue, et a sa source dans un des éléments de la nature de la femme.

Si l'on réfléchit à ce que l'on doit entendre par tempérament, c'est-à-dire la prééminence d'un des systèmes de l'organisme, concordant avec un état parfait de santé, on conviendra que la prééminence de l'élément intellectuel, sans altération de la santé générale, constitue une condition analogue à celles qui font les tempéraments sanguin, pituiteux, etc.; seulement, l'élément dominateur n'obéissant point, comme les appareils de l'organisme, aux lois de la matière, j'ai dû admettre un tempérament caractérisé par la suprématie de l'élément intellectuel qui, fatalement, lui devait donner son nom.

Par ces motifs, le tempérament intellectuel a tout aussi bien sa raison d'être que les autres tempéraments, et joue les mêmes rôles; en effet, si l'on se rappelle sous quelle dépendance l'élément intellectuel tient l'excitation et les jouissances vénériennes, on admettra et l'on concevra sans peine que la prééminence de cet élément soit, chez la femme comme chez l'homme, une cause de frigidité et agisse sur l'orgasme génésique à la façon des débilitants, parmi lesquels figure en première ligne le tempérament lymphatique.

Seulement, la médication n'est pas identique dans les deux cas, et il en doit être ainsi, puisque les éléments à combattre sont d'une nature si dissemblable.

Dans le premier cas, c'est-à-dire dans la frigidité par tempérament lymphathique, il faut surtout insister sur la médication générale que tout le monde connaît, et dont le fer, les toniques, les analeptiques, l'hydrothérapie et les bains de mer font la base, et ne pas se hâter d'agir, soit localement, soit spécialement, sur les organes génitaux. Dans le second cas, au contraire, c'est-à-dire dans la frigidité amenée par la prééminence de l'élément intellectuel, aucune médication générale n'est nécessaire; il faut s'adresser, d'une manière presque exclusive et en même temps, au consensus génital, c'est-à-dire au foyer des désirs vénériens, et à l'organe lui-même, instrument de ces désirs.

Lorsque le but de la première médication est atteint, et lorsque l'organisme a été relevé de l'allanguissement où le tenait l'abondance des humeurs blanches, il peut se présenter la nécessité d'agir sur les facultés génésiaques tant morales que physiques; en d'autres termes, il peut être nécessaire d'éveiller les désirs vénériens endormis et l'appareil génita languissant.

Sous le premier rapport, on met en usage les excitants moraux dont j'ai donné ailleurs la nomenclature; mais dans l'emploi de ces moyens, qui touchent de si près aux prescriptions de la morale, le médecin ne doit jamais oublier le respect auquel ont droit le sexe auquel il s'adresse, l'âge et l'état social de la malade, l'honneur et les vertus du foyer domestique, dont ne peuvent ni ne doivent jamais se départir la femme, l'épouse et la mère.

Comme médication excitante de l'organe copulateur, je place en première ligne les moyens locaux, tels que bains de mer, lotions froides ou chaudes sur la vulve et les lombes, frictions sèches ou composées sur le périnée, fumigations aromatiques sur les parties externes de la génération, et enfin, dans quelques cas, l'électricité.

Les agents médicaux internes, décorés du nom d'aphrodisiaques, tels que phosphore, acide formique, ginseng, etc., ne paraissent pas avoir sur la femme la même action que sur l'homme. J'ai fait, sous ce rapport, quelques expériences qui ne m'ont amené à aucun résultat décisif; mais il est vrai de dire aussi que l'influence qu'ils exercent sur le génésique de l'homme est si inconstante et si fautive, que l'on ne peut sûrement pas conclure à leur entière inanité sur la femme. Il n'en est pas de même des cantharides, qui, chez les deux sexes, agissent, non comme aphrodisiaques proprement dits, mais bien en déterminant une irritation vésicale qui retentit sur l'appareil génital, grâce au voisinage qui rapproche celui-ci de l'appareil urinaire. On peut donc, au besoin, recourir aux cantharides, soit en friction sur le périnée et les lombes, soit à l'intérieur, avec toutes les précautions qu'exige l'administration d'un agent aussi toxique, et que je n'ai point à rappeler ici.

Dans le traitement de la frigidité par tempérament intellectuel, c'est aux excitants moraux qu'on donne tout à la fois la préférence et son attention. Il faut d'un côté diminuer l'importance de l'élément intellectuel qui prédomine, et de l'autre éveiller la partie sensible de l'âme.

Pour remplir la première indication, on a presque toujours à lutter contre des tendances ambitieuses, n'importe le but de l'ambition, contre des goûts de vanité, des habitudes d'amour-propre ; on dérange souvent des calculs, on traverse parfois des espérances : n'importe, mettez dans vos prescriptions de la persistance et de la fermeté ; le succès seulement est à ce prix, car la femme, *qui est toute tête*, a une force de volonté peu commune.

En même temps que l'on arrache la emme à ses préoccupations, tantôt graves, tantôt futiles, on lui procure des distractions capables d'éveiller tout à la fois sa sensibilité morale et sa sensibilité physique. Ces distractions ne sauraient être les mêmes pour toutes les femmes : aux unes, il faut le bal, les spectacles, la société des hommes; aux autres, la poésie, les romans, la solitaire contemplation des beaux-arts; chez celles-ci, la vue de la nature, la solitude des bois, le charme de la campagne, excitent de tendres émotions; chez celles-là, enfin, l'âme ne s'ouvre qu'aux impressions douces ou aux émotions terribles des voyages.

On ne peut donc, *à priori*, fixer les règles à suivre dans le choix de ces distractions. L'élément moral a, pour se déterminer, tant d'excitants divers, tant de mobiles à nuances si changeantes, qu'il faudrait, pour tracer ces règles, établir le bilan de chaque individualité et dresser l'inventaire de chaque âme en particulier; c'est impossible : cette tâche, cette pénétration des individualités morales doit être laissée au tact du praticien, à l'observation du médecin et à l'esprit d'analyse du philosophe.

Quant aux moyens purement physiques que l'organe copulateur peut réclamer en pareille circonstance, j'estime que les excitants locaux dont j'ai parlé tout à l'heure sont tout à la fois les seuls et les meilleurs que l'on puisse employer. Les cantharides, tant à l'intérieur qu'à l'extérieur, doivent être proscrites; les bénéfices qu'on en pourrait retirer ne sauraient compenser les dangers dont s'accompagne souvent leur administration.

§ II. — **Frigidité symptomatique d'un état pathologique.**

Comme je l'ai fait pour l'impuissance, je diviserai les maladies qui s'accompagnent de frigidité : 1° en celles qui intéressent toute l'économie; 2° en celles qui n'affectent que les organes de la génération.

A. — *Maladies générales.*

Il ne peut être ici question des maladies aiguës ; cette réserve, que j'ai déjà établie plusieurs fois dans le cours de cet ouvrage, ne doit plus désormais se trouver sous ma plume.

Parmi les affections compatibles avec l'existence, on a cité l'embonpoint excessif comme pouvant entraîner la frigidité. Je ne partage point cette opinion : le développement énorme des formes et de l'abdomen peut s'opposer au coït, à l'intromission de la verge dans le vagin, en un mot au rapprochement des sexes, mais il n'éteint ni les désirs, ni la sensibilité génitale chez la femme. J'en pourrai citer plusieurs exemples, un entre autres, d'une femme dont les passions étaient si ardentes, que, ne pouvant les satisfaire avec son mari, elle payait un étranger pour se faire masturber, malgré les principes religieux et honnêtes qu'elle avait puisés dans sa famille.

L'excessive maigreur n'est pas non plus une cause de frigidité ; elle est même souvent l'attribut des femmes passionnées.

Quelques affections nerveuses s'accompagnent parfois d'insensibilité génitale : l'épilepsie est dans ce cas ; d'autres, au contraire, comme l'hystérie, amènent dans quelques circonstances une telle surexcitation génésiaque, que le coït est comme une source de voluptés amères et même de véritables souffrances. Dans les excès de la sensibilité les deux extrêmes se touchent : la jouissance est sur la lisière de la douleur.

Dans les névroses de l'intelligence et du sentiment, la sensibilité génitale est quelquefois abolie, mais plus généralement pervertie. Dans l'idiotie, dans la folie, les femmes éprouvent parfois une répulsion profonde pour les rapprochements sexuels ; tandis que, dans d'autres circonstances, elles s'abandonnent à la masturbation avec une sorte de fureur.

A peu près toutes les maladies dont les centres nerveux sont le siége peuvent amener tout à coup ou progressivement, par suite des troubles qu'elles jettent dans l'innervation générale, l'anéantissement partiel ou total de la faculté voluptueuse. D'abord ces affections, quand elles intéressent les organes intracrâniens, respectent rarement l'intelligence, et tarissent, par conséquent, les désirs vénériens dans leur source même ; en second lieu, elles altèrent plus ou moins profondément les fonctions du système nerveux sous la dépendance duquel se trouvent toutes les impressions, et par conséquent les impressions vénériennes.

D'autre part, toutes les maladies débilitantes, toutes celles qui attaquent la vie plastique, peuvent enlever aux organes du plaisir la force qui leur est nécessaire pour réagir sous les impressions vénériennes, les recevoir et les transmettre au consensus intime.

Enfin, certaines intoxications éteignent le sens vénérien chez la femme, et, parmi elles, la plus remarquable est sans contredit l'intoxication que subissent les ouvrières employées dans les fabriques de caoutchouc soufflé. M. le docteur Delpech, qui a fait de cette intoxication une étude remarquable dont je me suis déjà occupé à l'occasion de l'impuissance de l'homme, s'exprime ainsi sur ce sujet : « Chez la femme, dit-il, les fonctions génératrices s'amoindrissent dans la même proportion que chez l'homme ; la sensibilité spéciale diminue et disparaît, le désir des rapprochements sexuels s'éteint. Dans l'observation 12, l'indifférence de la malade devint telle sur ce point, qu'elle fut abandonnée pour cette cause par son mari (1). »

En dehors de ces quelques circonstances exceptionnelles, la femme n'est point déshéritée de son droit aux jouissances vénériennes, et, sous ce rapport comme sous beaucoup d'autres, son aptitude au plaisir est plus tenace que chez l'homme.

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(1) Delpech, *Nouvelles recherches sur l'intoxication spéciale que détermine le sulfure de carbone* (*Annales d'hygiène publ. et de méd. lég.*, 1863, t XIX, et tirage à part, p. 26).

Un traitement spécial n'est nécessaire dans aucun de ces cas ; la *maladie mère*, si je puis ainsi dire, doit seule et presque exclusivement attirer l'attention du médecin, puisque la frigidité alors n'est qu'un symptôme qui doit disparaître avec l'affection qui lui a donné naissance et l'entretient.

B. — *Maladies locales.*

Par maladies locales j'entends les maladies qui affectent une ou plusieurs parties de l'appareil génital ; aussi les diviserai-je, pour la clarté du discours, en maladies des organes externes et maladies des organes internes de la génération.

Maladies des organes externes de la génération. — Je ne puis ni ne dois m'arrêter à l'inflammation, et autres altérations de la vulve et du vagin qui changent en douleurs les plaisirs du coït ; je ne veux pas davantage aborder les tumeurs et les dégénérescences des mêmes régions, qui, en empêchant le rapprochement sexuel, privent fatalement la femme des voluptés vénériennes ; je ne dois m'occuper ici que des maladies qui affectent la sensibilité érotique, laquelle, ainsi que je l'ai déjà dit et comme je vais essayer de le démontrer encore, n'a pas son siége exclusif dans le clitoris.

Le phénomène physiologique du plaisir vénérien chez la femme se traduit, il est vrai, par un changement dans le volume et la direction du clitoris ; cet organe éprouve une véritable érection et se courbe en bas, entre les deux nymphes, pour présenter son extrémité libre, sa partie la plus sensible, aux frottements de la verge pendant l'acte du coït ; à n'en pas douter, le clitoris joue un rôle, et un rôle très-important, dans la manifestation du plaisir érotique chez la femme, puisque l'érotomanie, — et les exemples n'en sont pas rares, — a été guérie par l'amputation de cet organe.

Mais ce double fait, l'un physiologique et l'autre pathologique, établit-il la concentration absolue de la sensibilité génitale dans le clitoris? Je ne le pense pas. D'abord, et maintes observations l'attestent, l'amputation du clitoris, en faisant cesser les accès d'érotomanie, n'a pas tari chez la femme la source des voluptés ; secondement, pendant le rapprochement sexuel, les époux prennent quelquefois des postures où il est impossible que le clitoris soit touché par la verge de l'homme, et pourtant la femme n'est pas frustrée dans ses droits; on dirait même qu'elle atteint une plus grande somme de volupté. Bien plus, des femmes m'ont avoué être complétement insensibles aux titillations du clitoris et n'éprouver du plaisir que par les frottements de la verge ou de tout autre corps contre les parois de l'entrée du vagin ; ainsi s'expliquent les manœuvres de certaines masturbatrices qui, dédaignant la sensibilité du clitoris, introduisent dans la cavité vaginale des corps de toute forme et de toute espèce : évidemment, si le clitoris était le siége exclusif du plaisir, il serait aussi le siége unique sur lequel porteraient les manœuvres des femmes livrées à l'onanisme.

Le tissu érectile qui rampe entre les membranes qui constituent le vagin, et les deux bulbes du vestibule rendent parfaitement compte de la sensibilité dont je parle.

Il faut donc reconnaître que, dans l'évolution du plaisir sexuel, le clitoris remplit un rôle important, mais que ce rôle ne lui appartient pas d'une manière exclusive, et que d'autres organes de l'appareil copulateur ont une part plus ou moins grande dans le développement de cette sensibilité spéciale.

En veut-on un exemple? Parent-Duchatelet cite le fait suivant, dans lequel le clitoris était frappé d'insensibilité malgré son développement considérable, mais à cause peut-être de l'absence des organes génitaux internes : « A l'époque où je faisais ces recherches, dit cet excellent observateur, on ne connaissait à Paris que trois prostituées dont le clitoris présentait un développement notable; mais sur une d'elles ce développement était énorme, car cet organe avait la longueur de 8 centimètres (3 pouces), et en grosseur il égalait le doigt indicateur; on y remarquait un gland bien formé et recouvert d'un prépuce, au-dessous duquel se trouvait de la matière sébacée : c'était, à s'y méprendre, la verge d'un enfant de douze à quatorze ans, peu avant sa puberté. Cette fille, âgée de vingt-trois ans, n'avait jamais été réglée et n'offrait pas la moindre trace de mamelles; il est probable qu'elle manquait également d'utérus, car le toucher par le vagin ne faisait reconnaître qu'un tubercule sphérique sans ouverture, et la même exploration pratiquée par le rectum constatait l'absence de l'organe; malheureusement on n'a pas eu recours au spéculum pour cet examen important. Cette fille ayant été pendant longtemps à la prison des Madelonnettes, les médecins de cette prison ont cherché à découvrir quelle pouvait être l'influence d'un pareil état sur l'activité des passions érotiques; mais cette fille leur a toujours dit qu'elle était aussi indifférente pour les hommes que pour les personnes de son sexe; qu'elle ne s'était livrée à la prostitution que par l'excès de la misère et du besoin, et que si elle avait eu pendant quatre ans un amant dans son pays, elle n'était restée avec lui que parce qu'il pourvoyait à son existence. J'ai fait surveiller cette fille pendant six semaines, je l'ai fait questionner par plusieurs personnes, et jamais elle n'a varié dans ses réponses. Sortie de prison, elle a tenu un langage semblable aux médecins du dispensaire, qui me l'ont rapporté.

» Cet état d'indifférence pour un autre sexe, malgré un développement aussi considérable du clitoris, pourrait, jusqu'à un certain point, s'expliquer chez cette fille par l'absence de l'utérus, et probablement par celle de ses annexes (1). »

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(1) Parent-Duchatelet, *De la prostitution dans la ville de Paris*, 3^e édit. Paris, 1837, t. I, p. 209 et 210.

Si un développement aussi considérable du clitoris coïncide avec une frigidité tout à la fois morale et physique, il faut bien admettre, à moins de repousser toute idée physiologique, que cet organe n'est pas le siége exclusif du plaisir chez la femme, et qu'il ne concourt que dans une certaine mesure à la manifestation des désirs érotiques et de la volupté.

Quoique le plaisir vénérien soit le résultat d'une sensibilité spéciale, comme la vision, le goût, l'odorat, etc., il n'en est pas moins sous l'empire de la sensibilité générale, et, à ce titre, subissant toutes les altérations dont cette sensibilité peut être affectée. Ainsi toutes les maladies des centres nerveux, celles des nerfs sacrés qui se distribuent aux parties génitales de la femme, peuvent amener la suspension ou l'anéantissement de la sensibilité sexuelle.

Je ne puis ici, on le comprend, faire l'énumération de ces maladies, dont l'étude appartient bien plutôt à un traité général de pathologie qu'à une monographie du genre de celle-ci. Il doit me suffire de noter les relations qui peuvent exister entre les altérations de la sensibilité érotique et les affections si multiples et si diverses auxquelles sont exposés les centres nerveux et les nerfs qui président à la sensibilité génitale, Ainsi, par exemple, et pour ne citer qu'un seul fait, il est certain, comme j'ai eu l'occasion de m'en convaincre dans deux circonstances, qu'une tumeur pressant sur le plexus sciatique est susceptible d'amener la paralysie du nerf honteux, et, par suite, d'éteindre la sensibilité vénérienne.

C'est peut-être par une explication analogue que l'on parviendrait à se rendre compte de l'indifférence qu'éprouvent certaines femmes après des repas copieux, pendant la grossesse ou dans un état habituel de constipation.

Quoi qu'il en soit, et si l'on se rappelle combien est rare la frigidité idiopathique, on doit apporter la plus grande attention dans l'examen de la malade; car bien souvent, si l'on s'arrête à un examen superficiel, on prend pour une frigidité essentielle un symptôme pur et simple de quelque affection, soit de la moelle, soit des nerfs qui vont animer les parties génitales de la femme.

Le diagnostic différentiel est donc, en cette circonstance, de la plus haute, et je pourrais même dire l'unique importance, car le pronostic et le traitement de la frigidité sont entièrement subordonnés à la gravité et à la nature de l'affection première.

Maladies des organes internes de la génération. — Quand on réfléchit que le désir et le plaisir vénériens ne sont pas autre chose que l'excitant et la récompense, si je puis ainsi dire, de l'acte reproducteur, on se demande si, dans les cas où la reproduction est impossible, comme en l'absence de l'utérus et des ovaires, la nature a respecté un aiguillon dont elle n'a plus que faire, et une rémunération dont la femme ne peut plus se rendre digne; en d'autres termes, l'absence des conditions fondamentales de la fécondation chez la femme condamne-t-elle le sens vénérien au silence et au repos ?

Voici une observation prise à l'Hôtel-Dieu, dans le service de Rostan, et que j'ai publiée dans le journal que je dirigeais à cette époque (1) ?

La femme qui en fait le sujet est une prostituée, c'est dire que j'ai eu toute facilité dans les moyens d'investigation.

Les organes externes de la génération sont normalement conformés ; le pubis est couvert de poils, comme chez le commun des femmes ; les grandes et les petites lèvres ont un développement ordinaire, et le clitoris ne présente rien de remarquable pour la forme et pour la grosseur ; les seins ont un volume convenable et sont en harmonie avec toutes les parties du corps qui offrent les attributs du sexe féminin ; la voix n'est point mâle, et rien, dans l'habitude extérieure de cette femme, ne trahit l'étrange conformation de ses organes internes de la génération.

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(1) *France médicale et pharmaceutique*, t. II, p. 149, 1855.

En introduisant le doigt dans le vagin, on éprouve, dès l'entrée, une résistance dont on ne tarde pas à se rendre compte : on est au cul-de-sac vaginal, qu'avec un léger effort on refoule dans le bassin de toute la longueur du doigt qui pratique le toucher. Ce cul-de-sac est entier, sans solution de continuité, et ne porte pas la moindre trace de col utérin. Exploré dans tous les sens, par le toucher et au spéculum, pressé dans toutes les directions, il ne laisse soupçonner aucun vestige de matrice, et l'on cherche vainement ce bouton ou cette espèce de tubercule signalés par quelques auteurs.

Le toucher rectal confirme les données fournies par le toucher vaginal, et l'utérus ne révèle sa présence par aucun indice, quelque faible qu'il soit. Le doigt, introduit dans le rectum, arrive librement à la rencontre de celui qui presse le cul-de-sac du vagin, et perçoit, sans autre intermédiaire que les membranes vésicale et intestinale, une sonde introduite dans le réservoir urinaire.

Bien évidemment il y a ici absence complète, absolue de l'utérus.

En est-il de même des ovaires ?

M. de Beauvais assure ne les avoir jamais rencontrés ; pour moi, en portant le doigt assez haut dans le rectum, j'ai bien distinctement touché deux corps ovoïdes, flottant dans le bassin, et de la grosseur à peu près d'une aveline. Sont-ce les ovaires, ou sont-ce simplement quelques ganglions engorgés du mésentère ? Dans ce dernier cas, il faut avouer que la coïncidence est bizarre et que la nature se plaît à semer sur notre voie des sujets de doutes et d'erreurs.

Comme on le doit penser, l'hémorrhagie menstruelle ne s'est jamais montrée chez cette femme, qui, d'une intelligence assez bornée, n'a que des réponses contradictoires sur les questions qu'on lui adresse relativement au *molimen*.

Le sens vénérien, sans présenter une grande énergie, existe pour les désirs et pour la sensation voluptueuse. Avant de tomber dans la prostitution, cette femme avait aimé, et, comme le coït est douloureux, par suite de la brièveté du conduit vaginal, elle trouve le plaisir dans les attouchements de l'homme et dans la masturbation, à moins que le congrès ne s'accomplisse avec certains ménagements, auquel cas l'union sexuelle lui procure la volupté.

Rapprochons maintenant cette observation des faits analogues que possède la science, et voyons jusqu'à quel point nous pouvons répondre à la question que nous nous sommes posée, à savoir : L'absence des ovaires ou celle de la matrice détruit-elle le sens vénérien ou génésiaque?

Le rôle secondaire auquel l'utérus a été réduit dans l'acte de la fécondation par les travaux de Harvey, de Sténon, de R. de Graaf et de tous les ovologistes modernes, fait prévoir que ses anomalies et ses maladies n'ont pas sur l'appareil génital l'influence que les anciens lui attribuaient. Baudelocque rapporte un cas d'absence complète de matrice avec conformation normale des organes externes de la génération (1). Le professeur Heyfelder (d'Erlangen) a publié une observation analogue, et il a noté que la femme qui portait ce vice de conformation aussi complet que possible, non-seulement accomplissait le coït dans toutes les conditions physiologiques, mais encore avait, à chaque époque menstruelle, une perte de sang par l'urèthre (2). On ne peut méconnaître ici l'existence des ovaires. Krahmer avait déjà rapporté une observation analogue (1), tandis qu'Engel et Dupuytren avaient directement constaté, sur le cadavre, la présence des ovaires coïncidant avec l'absence complète de la matrice. — Le fait que j'ai recueilli à l'Hôtel-Dieu et que j'ai rapporté plus haut, s'il ne démontre pas l'entière indépendance des ovaires à l'endroit de l'utérus, comme les faits d'Engel et de Dupuytren l'ont prouvée au point de vue anatomique, et comme les observations de Krahmer et de Heyfelder l'ont constatée sous le rapport physiologique, ce fait, disons-nous, rapproché de ceux que j'ai cités, et dont j'aurais pu augmenter le nombre, ne laisse aucun doute sur l'inanité des relations que l'on a voulu établir entre l'organe gestateur et l'organe copulateur, entre les fonctions utérines et le sens vénérien.

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(1) Baudelocque, *Art des accouchements*. Paris, 1796, t. I, p. 183.

(2) Heyfelder, *Deutsche Klinik*, 1854, n° 51.

Au point de vue purement anatomique de ces relations, l'observation de Parent-Duchatelet, que j'ai rapportée plus haut, montre que le principal organe du plaisir, loin d'avoir suivi la destinée de l'utérus, a été soumis, au contraire, à une loi inverse de développement, et qu'il ne peut être accusé, par conséquent, de subordonner ses fonctions à celles de la matrice. Ainsi, au nom de la théorie inductive et au nom de l'expérience, l'absence et les maladies de la matrice n'altèrent aucune des conditions du coït physiologique, c'est-à-dire désirs vénériens, réception de la verge dans le vagin, et enfin volupté amoureuse.

Mais, au nom de la même théorie inductive, par cela même que les ovaires remplissent, dans la physiologie de la reproduction, le rôle par excellence, qu'ils sont le signal et qu'ils fournissent les éléments de la faculté génératrice, il faudrait que tout le sens génital fût sous leur dépendance, et que leur empire s'étendit, non-seulement sur les organes mis au service de ce sens, mais encore sur l'incitateur interne, sur le *consensus* intime qui le dirige dans ses volitions.

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(1) L. Krahmer, *Handbuch der gerichtlichen Medizin*. Halle, 1851, p. 180.

Beaucoup de physiologistes l'ont ainsi pensé, et R. de Graaf a exprimé cette opinion en cette espèce d'aphorisme : *Castrata animalia feminas putamus*, dit-il, *non solum fecunditate destituuntur, sed venereæ voluptatis omnem deponunt appetitum* (1). Malheureusement, l'observation ne confirme pas cet axiome : la conservation des désirs et du plaisir vénériens, coïncidant avec l'absence congénitale ou accidentelle des ovaires a été observée et les exemples n'en sont pas rares dans la science. Alors, en présence de cette dérogation aux lois de la physiologie, on est porté à se demander si la copulation, dans la race humaine, n'est bien exclusivement que le premier acte de la génération, ou si, eu égard à notre nature morale, elle n'est pas également un moyen, un instrument, si je puis ainsi dire, de sociabilité?

S'il en est ainsi, comme permet de le supposer la faculté accordée à l'homme seul d'accomplir le congrès en tout temps, et à laquelle prennent graduellement part les animaux réduits en domesticité, l'absence, et à plus forte raison les maladies des ovaires, ne doivent exercer sur le sens vénérien, et, par suite, sur l'appareil copulateur, qu'une influence bornée et peut-être nulle.

Il faut se garder d'établir, comme on le fait communément, une analogie trop frappante entre le testicule et l'ovaire. Au point de vue de la génération, leurs rôles, il est vrai, sont identiques : l'un sécrète le produit mâle, et l'autre le produit femelle, tous deux indispensables pour la formation d'un individu nouveau; mais, sous le rapport du plaisir vénérien, tout un monde les sépare : tandis que le produit de l'ovaire reste complétement étranger au développement de la volupté amoureuse, le produit du testicule, au contraire, est la source même de cette volupté. Malgré ce qu'ont pu dire certains physiologistes, le véritable délire érotique chez l'homme n'a lieu qu'au moment de l'éjaculation spermatique ; tandis que, chez la femme, que l'ovaire émette ou non son ovule, le plaisir est le même. Je sais bien qu'à l'approche des règles, le désir vénérien s'accroît et le spasme cynique augmente : mais cette recrudescence a ses motifs dans l'état congestif de tout l'appareil génital, à la suite duquel une hémorrhagie va se produire.

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(1) *De mulierum organis*, etc. (*Bibliothèque anatomique de Manget*. Genève, 1685, t. I, p. 613).

Laissons donc une analogie impossible, au point de vue érotique, entre les testicules et les ovaires, et n'évoquons pas les éternels fantômes des eunuques et des castrats, qui d'ailleurs abdiquent si peu leur ressource de sociabilité, que les dames romaines, du temps de Perse et de Juvénal, en usaient largement pour la plus grande gloire de leur honneur et le contentement de leur famille.

Sous le rapport anatomique, la question de corrélation entre le développement des ovaires et celui de l'appareil copulateur est jugée par les faits. Contre un cas de Morgagni, dans lequel l'absence des ovaires coïncidait avec un arrêt de développement des organes du coït (1), il serait facile d'apporter des observations nombreuses où la même anomalie existait avec une bonne conformation de l'appareil génital externe. Bien plus, la femme dont Parent-Duchatelet nous a tout à l'heure raconté l'histoire, et chez laquelle l'absence des ovaires était rendue probable par le manque absolu de menstruation et par l'effacement des mamelles, cette femme, dis-je, loin de présenter une atrophie de l'organe copulateur par excellence, offrait, au contraire, un clitoris énorme. — Notre malade de l'Hôtel-Dieu, si M. de Beauvais a porté un diagnostic plus juste que le mien, est un nouvel exemple de la parfaite conformation des organes externes de la génération coïncidant avec l'absence congénitale des ovaires.

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(1) Morgagni, *De sedib. et caus. morborum*. Naples, 1762, epist. XLVI, art 20.

Au point de vue physiologique, les ovaires, au dire de beaucoup d'auteurs, exercent sur le sens vénérien une influence quelquefois contraire. Ainsi, pendant que Hessychius et Suidas accusent Gigès d'avoir fait extraire les ovaires à des femmes pour en obtenir plus de volupté, Boerhaave rapporte, d'après Wier et de Graaf, le fait d'un châtreur de porcs, qui, irrité du désordre dans lequel vivait sa fille, lui extirpa les ovaires, et éteignit ainsi chez elle le feu qui la dévorait (1).

Des observations tendant à prouver le même fait ont été rapportées par J.-A. Cook (2), Colombi (3), Robert Gooch (4), etc. De plus, certaines relations ont été notées, d'une part, entre l'énergie du sens génital (désirs et plaisirs), et d'autre part entre l'état des ovaires et la menstruation : ainsi, pour les ovaires, Théoph. Bonet raconte l'histoire d'une jeune fille dont l'amour contrarié amena la mort, et qui présenta à l'autopsie les ovaires gonflés et contenant des vésicules volumineuses (5). Pour les menstrues, on a remarqué que le désir et le plaisir vénériens sont plus prononcés à l'approche des règles qu'à toute autre époque; et que l'hémorrhagie mensuelle est plus abondante chez les femmes voluptueuses que chez celles qui vivent dans la chasteté (1).

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(1) Boerhaave, *Prælectiones academicæ*. Leyde, 1761, t. II, p. 127, et de Graaf, *De mulier. organis* (*Biblioth. anat. de Manget*. Genève, 1685, t. I, p. 613).

(2) *Journ. des connaiss. médico-chirurgic.*, t. IV, p. 163.

(3) Frank de Franckenau, *Satiræ medicæ*. Leipzick, 1722, p. 41.

(4) R. Gooch, *Lectures on Midwifery*, etc. Londres, 1830, chap. I, sect. 2.

(5) Théoph. Bonet, *Sepulchretum*. Genève, 1679, sect. 8, t. II, p. 216.

L'opinion que ces faits expriment a généralement cours dans la science, à ce point que Haller et Carus sont allés jusqu'à dire : « que la propension de la femme aux plaisirs de Vénus est en raison directe du plus ou moins de vitalité dont jouissent les ovaires, et même de leur volume plus ou moins considérable, et de leur turgescence. »

Négrier appuie cette opinion sur des faits et sur des autopsies. Il estime qu'une menstruation abondante et qu'un sens génital développé sont toujours les indices d'ovaires volumineux, à ce point qu'il propose d'appeler *tempérament ovarien* (2), pour en bien marquer le point de départ, cet ensemble de phénomènes généraux et locaux que l'on désignait, jusqu'à présent, sous le nom de tempérament génital ou utérin.

Je ne puis accepter une opinion aussi absolue, en présence des faits dont nous sommes tous les jours les témoins. La ménopause amène l'atrophie des ovaires; après l'âge critique, ces organes diminuent de volume et n'entrent plus en turgescence; cependant le sens génésiaque ne suit pas les lois de ce dépérissement, et l'on voit, tous les jours, des femmes dont les règles ont disparu depuis longtemps, goûter les plaisirs de Vénus avec une ardeur à laquelle porteraient envie maintes femmes bien menstruées.

Enfin, j'ai connu une jeune femme de vingt-deux ans, qui, malgré une absence absolue de menstruation, était agitée par les désirs vénériens les plus impétueux, et trouvait dans le coït une source toujours nouvelle et toujours abondante de voluptés. Cette jeune femme, poussée par le besoin irrésistible des rapprochements sexuels, sans qu'elle manifestât d'autre symptômes d'érotomanie, quitta un jour la maison paternelle et vint dans la ville voisine, où elle ne tarda pas à se livrer à la prostitution. Cinq années passées dans cette condition misérable ne purent contenter sa lubricité, à laquelle la mort mit enfin un terme. A l'autopsie, à laquelle j'assistai, et qui eut lieu à l'hôpital Saint-Éloi de Montpellier, on constata l'atrophie des deux ovaires, qui n'étaient représentés que par des espèces de tubercules perdus dans les ligaments.

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(1) Burdach, *Physiologie*, traduit par Jourdan, t. I, p. 289.

(2) Négrier, *Recueil de faits pour servir à l'histoire des ovaires et des affections hystériques de la femme*. Angers, 1858.

Mais je m'arrête. Sans contester les relations qui, chez la femme, comme chez l'homme, unissent le sens vénérien à l'organe sécréteur de l'élément reproducteur, j'estime que c'est aller trop loin, et que c'est s'exposer à des mécomptes, que de voir dans la menstruation (fonction ovarienne) le thermomètre, si je puis ainsi dire, du plaisir vénérien, et de considérer l'absence de cette fonction, et par conséquent le manque ou le dépérissement de l'ovaire, comme un signe tout à la fois d'infécondité et de frigidité.

En résumé :

Le sens vénérien n'est, en aucune manière, sous l'empire de l'utérus ; il entretient plus de sympathies avec l'ovaire, qui n'est pas, tant s'en faut, l'unique foyer de ses excitations.

CHAPITRE IV

FRIGIDITÉ CONSÉCUTIVE

Les circonstances de diverses natures auxquelles peut succéder la frigidité chez la femme sont beaucoup moins nombreuses que celles qui amènent l'impuissance chez l'homme. Aussi, sans admettre, en cette place, toutes les divisions que j'ai poursuivies dans le chapitre consacré à l'impuissance consécutive chez l'homme, je partagerai en deux grandes classes les circonstances *physiologiques* ou *pathologiques* qui peuvent être suivies de frigidité ; elles seront générales ou locales.

1° *Circonstances générales.*

Les circonstances générales dont le retentissement sur le sens génital est assez profond, soit pour éteindre les désirs vénériens, soit pour suspendre la sensibilité spéciale de l'appareil, appartiennent toutes au domaine pathologique ; ce sont principalement les affections dont l'influence délétère a porté, ou sur l'innervation, ou sur les forces plastiques.

Je ne parle pas ici des altérations organiques des centres nerveux, comme le ramollissement, les congestions sanguines ou séreuses, les compressions, etc., du cerveau ou de la moelle dont la paralysie *morale* ou physique est souvent la conséquence ; mais de ces affections générales de l'innervation, dont le siége est inconnu, qui ne laissent après elles aucune trace matérielle de leur passage, et qui sont désignées dans la science sous le nom de *névroses*. De toutes les névroses, l'épilepsie est celle qui paraît jouer le rôle le plus important dans le sujet qui nous occupe, et son action antisensuelle, si je puis m'exprimer ainsi, se fait également sentir sur le penchant vénérien et sur les organes de la volupté.

Ce fait semble peut-être en opposition avec la salacité remarquable que présentent les idiots, presque tous épileptiques ; mais cette contradiction n'est qu'apparente, car la salacité appartient à l'idiotie et non à l'épilepsie ; et secondement, elle coïncide avec l'existence de l'affection, tandis que je considère, en ce moment, l'état du sens génital après la disparition de la maladie. Dans le premier cas, la salacité est un symptôme du mal ; dans le second, la frigidité n'en est qu'une conséquence

Cette langueur vénérienne qui succède parfois à l'épilepsie a une durée très-variable. Si le mal caduc a cessé avant l'établissement des règles, il se peut que la menstruation ramène la vie dans le sens génital et fixe, dans leur voie normale, les aspirations de la puberté ; tout se passe alors comme à l'ordinaire. Mais si l'épilepsie a existé pendant la période menstruelle, soit que la fonction cataméniale ait été troublée, soit qu'elle ait toujours suivi ses évolutions régulières, l'indifférence, et même l'éloignement pour les plaisirs sexuels, s'ils succèdent à l'épilepsie, persistent pendant un temps dont il est difficile de fixer le terme. Souvent, une crise favorable se produit à la suite d'une émotion vive, imprévue, comme une grande douleur ou une grande joie ; la gestation peut amener le même résultat, et alors la femme qui avait conçu sans plaisir, trouve dans la grossesse une source toute neuve de voluptés.

Quand la nature est impuissante à ranimer elle seule l'ardeur du sens génital, l'art doit intervenir et appeler tout à la fois à son aide les excitants moraux et les excitateurs locaux de la sensibilité génitale, sur lesquels je me suis assez longuement expliqué ailleurs pour qu'il soit inutile d'y revenir ici.

Il suffit également d'indiquer, comme une source de frigidité consécutive, toutes les affections qui ont profondément altéré les forces plastiques de l'économie ; le sommeil du sens génital est la conséquence logique de l'absence de la vitalité, et son réveil coïncide avec le retour des forces vitales. De semblables banalités me dispensent de plus longs développements.

2° *Circonstances locales.*

La sensibilité génitale court risque de s'éteindre à la suite de la destruction des organes sensitifs de la copulation : un chancre, l'estiomène dont j'ai précédemment parlé, une brûlure, comme j'en ai vu un exemple, peuvent amener un pareil résultat; cependant pour que toute sensibilité soit éteinte, il faut que la lésion soit assez étendue, et que partout, au clitoris comme aux bulbes, un tissu cicatriciel ait remplacé le tissu normal.

Ces conditions sont excessivement rares; on ne les rencontre guère que chez les femmes dont l'appareil copulateur a été tout entier soumis aux causes de destruction, comme dans les cas de brûlures.

L'accouchement laisse quelquefois aussi après lui une insensibilité génitale qui, fort heureusement, n'a pas la gravité de celle qui succède à la transformation des tissus.

Cependant pour ceux qui placent dans le clitoris seul le siége du plaisir sexuel chez la femme, l'accouchement, quelque laborieux qu'on le suppose, ne doit jamais porter atteinte à cette fonction, parce que la déchirure de la vulve, quand elle se produit, a lieu à la fourchette et non à la commissure supérieure des petites lèvres.

Mais pour ceux au contraire qui, à l'exemple de Kobelt, font découler le plaisir, chez la femme, du jeu harmonique de tout l'appareil copulateur, et qui attribuent aux bulbes du vagin un rôle notable, l'accouchement long et pénible peut devenir une cause de trouble dans cet appareil, par les congestions et les déchirures que la tête trop volumineuse de l'enfant est capable de déterminer sur ces parties; pourtant si l'on considère l'élasticité dont sont douées les parois vaginales et la moindre résistance qu'offre la partie inférieure de la vulve, on avouera que la parturition doit rarement amener une lésion soit des bulbes, soit du réseau intermédiaire, soit du tissu érectile du vagin.

Mais que la lésion porte sur le muscle bulbo-caverneux ou sur le tissu érectile des bulbes eux-mêmes, il n'en est pas moins démontré pour moi que, dans quelques cas, le passage à la vulve de la tête de l'enfant détermine une lésion qui empêche le sang de venir des bulbes dans les corps caverneux du clitoris, et qui, par suite, rend impossible l'espèce d'érection clitoridienne nécessaire pour la manifestation du plaisir.

Cette impossibilité d'érection, qui entraîne fatalement l'impossibilité du plaisir, mais non pas celle des désirs vénériens, a une durée variable, pendant laquelle on peut s'assurer de la réalité de la lésion, en titillant le clitoris.

Mon attention fut pour la première fois dirigée de ce côté par les confidences d'une femme qui, voulant se masturber quelques jours après son accouchement, ne put jamais, quoi qu'elle fît, se procurer les sensations voluptueuses qu'elle recherchait ; elle ne les retrouva qu'après un repos assez long.

Cette espèce de frigidité, eu égard à sa courte durée et aux circonstances au milieu desquelles elle se produit, n'a pas une importance pratique bien grande, et ne doit pas, conséquemment, m'arrêter davantage.

J'ai hâte d'aborder la cause réelle et la plus commune de la frigidité de la femme, dépendant de circonstances qui se rattachent à l'appareil copulateur lui-même.

Je veux parler des excès vénériens.

Comme chez l'homme, ces excès peuvent se produire selon le mode naturel ou d'une manière irrégulière.

Dans le premier cas, nous aurons les *excès de coït ;*

Dans le second cas, nous aurons la perversion du sens génital, c'est-à-dire l'onanisme, la tribadie et la sodomie.

C'est dans cet ordre que je vais les examiner.

Excès de coït. — Les excès de coït, envisagés seulement sous le rapport de la frigidité, exercent une action délétère et sur les organes de la copulation et sur le principe des désirs vénériens.

C'est à ce double point de vue que je me propose de les étudier.

1° *Action des excès de coït sur les organes de la copulation.* — Qu'on me permette, avant toute chose, de rappeler les observations intéressantes que Parent-Duchatelet a recueillies sur les prostituées, types, par métier, des excès de coït : « Les prostituées, dit-il, présentent fréquemment, dans l'épaisseur des grandes lèvres, des tumeurs qui commencent par un petit noyau d'engorgement et se tuméfient à chaque époque menstruelle ; on ne les observe jamais que d'un côté à la fois, et lorsqu'elles sont abandonnées à elles-mêmes, elles acquièrent un volume assez considérable ; elles sont indolentes, et ne gênent les femmes qui les portent que d'une manière purement mécanique. Il est rare que ces tumeurs soient fibreuses ; le plus ordinairement, elles sont remplies d'un liquide albumineux très-épais, ou d'une substance mélicérique. Quelques-unes se développent aussi à la base des petites lèvres ; ces dernières sont de même nature que les autres, mais fort douloureuses, et n'acquièrent jamais un grand développement.

» Le métier des prostituées explique le travail inflammatoire qui se développe quelquefois dans ces tumeurs et les fait aboutir ; mais elles se remplissent en peu de temps, et déterminent des fistules désagréables ; on ne peut guérir ces fistules qu'en enlevant les kystes qui les forment ou en les faisant suppurer.

» Tous ceux qui ont eu occasion de percer ces kystes et d'enlever ces tumeurs s'accordent sur la fétidité extrême du liquide qu'ils contiennent ; sous le rapport du désagrément que procure cette fétidité, aucun liquide pathologique, suivant ce que m'a dit plusieurs fois Dupuytren, ne pouvait lui être comparé. Cette fétidité est inhérente au liquide, et ne peut pas être attribuée à la présence de l'air. Je tiens des chirurgiens du dispensaire que, lorsqu'ils sont obligés d'ouvrir ces tumeurs, ils se servent d'un bistouri à manche très-long, pour éviter le contact du liquide et, par conséquent, l'odeur qui sans cette précaution resterait inhérente à leurs mains pendant deux ou trois jours, sans qu'il fût possible de la faire disparaître.

» Rien de plus fréquent que les abcès ordinaires dans l'épaisseur des grandes lèvres; ils ont toujours une marche aiguë, et se terminent comme chez toutes les autres femmes qui y sont fréquemment exposées.

» Il n'en est pas de même de ceux qui se développent quelquefois dans la cloison recto-vaginale, partie qui, suivant quelques observateurs, est très-amincie chez les prostituées; ils dégénèrent souvent en fistules très-difficiles à guérir, et que gardent souvent pendant toute la vie celles qui les portent; le plus ordinairement ces fistules se rétrécissent et ne mettent pas obstacle à l'exercice du métier. A l'époque où je faisais mes recherches dans la prison, il s'y trouvait cinq ou six filles avec cette infirmité; les médecins de cet établissement estimaient que le nombre des filles qui exerçaient leur métier dans Paris avec cette dégoûtante infirmité pouvait bien être de trente. Qui le croirait? on a vu de ces fistules guérir complétement, malgré l'influence de tant de causes capables de les entretenir et de les aggraver. Ce n'est pas cependant ce qui arrive le plus ordinairement : chez une fille, les tentatives que l'on fit pour obtenir la guérison déterminèrent une ouverture d'une dimension telle, que les deux conduits ne formaient plus qu'un cloaque, ce qui n'empêchait pas que cette fille ne fût une des plus recherchées...

» D'après les observations faites dans les infirmeries des prisons, ces fistules recto-vaginales coïncident presque toujours avec la phthisie; on y a vu aussi qu'elles s'accompagnent souvent d'un engorgement des grandes lèvres. Mais cet engorgement n'est pas une infiltration ou un œdème ordinaire; il est dur et résistant, il ne cède pas à la pression et ne détermine pas de douleur.

» Cette infirmité prend quelquefois un tel accroissement chez quelques filles, qu'elles ne peuvent plus faire leur métier, et que, devenues à charge à elles-mêmes, elles cherchent un asile pour y terminer leur triste existence : c'est ordinairement l'infirmerie de la prison qu'elles choisissent de préférence, et dans laquelle elles se font enfermer, etc. (1) ».

Parmi les infirmités dont Parent-Duchatelet vient de nous dérouler le tableau, les unes, et c'est à ce qu'il paraît le plus grand nombre, ne produisent aucune douleur, mais peuvent devenir, soit un obstacle à l'intromission de la verge, soit un motif de répugnance et de dégoût; les autres déterminent des souffrances qui, non-seulement éloignent les pensées vénériennes, mais encore empêchent toute manifestation de volupté; dans ce cas sont les tumeurs des grandes et des petites lèvres, et quelquefois aussi les fistules vaginales.

Mais ces affections, qui occupent dans le cadre nosologique une place spéciale, ne doivent pas m'arrêter plus longtemps.

Il me faut, au contraire, parler d'une transformation que subit la muqueuse vulvaire et vaginale, et qui n'est pas sans influence sur le développement du plaisir érotique.

Cette transformation, bien connue du public qui a infligé à la femme qui la porte une dénomination caractéristique, n'est autre chose que la sécheresse et le dureissement de cette membrane : on dirait que la muqueuse, sous l'influence du contact souvent renouvelé de la verge, subit des changements analogues à ceux par lesquels passent chez le fœtus les téguments externes avant de revêtir les caractères épidermiques; la muqueuse vulvaire et vaginale devient une véritable peau, un parchemin ridé, que n'assouplissent plus les sécrétions sébacées.

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(1) Parent-Duchatelet, *De la prostitution dans la ville de Paris*. 3ᵉ édit. Paris, 1857, t. I, p. 235.

Cette transformation, que j'ai eu occasion de constater chez des femmes qui, par métier, faisaient abus de leurs organes génitaux, tient peut-être moins aux excès du coït qu'à des lavages fréquents, soit avec de l'eau froide, soit, et c'est le cas le plus commun, avec des substances aromatiques et astringentes. Mais que cette transformation reconnaisse les excès de coït comme cause directe ou comme cause indirecte, toujours est-il que la sensibilité génitale en est profondément affectée, et que le plaisir vénérien est, sinon complétement suspendu, du moins considérablement affaibli.

Cet état, dont la femme a presque toujours conscience, est facilement reconnaissable au toucher. Le doigt, introduit dans le vagin sans le secours d'un corps gras, glisse difficilement entre les parties, et constate sans peine une sécheresse et des rugosités qui n'y sont pas ordinaires ; la température n'y est pas sensiblement diminuée ou augmentée, et l'on y sent rarement les contractions fibrillaires déterminées quelquefois par la présence de l'indicateur.

Sans doute, je le répète, le changement que je signale est insuffisant pour amener une complète frigidité ; mais il peut à ce point affaiblir la sensibilité génitale que le coït, perdant son stimulant naturel, devienne pour la femme un acte, sinon odieux, du moins à peu près indifférent.

Il importe donc, surtout si l'on se place au point de vue des rapports conjugaux, d'obvier à un état qui, sans parler des inconvénients dont il atteint la femme, peut jeter entre les deux époux le trouble et le désordre.

Avant toutes choses, il faut interdire les lavages froids ou aromatiques, que l'on remplace avec avantage par des injections et des bains locaux chauds. On tient à demeure des cylindres mous, enduits d'un corps gras ; et dans quelques circonstances, surtout si la muqueuse est pâle et décolorée, on porte sur elle une action irritative, comme celle de la moutarde, par exemple.

Mais si la transformation est complète, c'est-à-dire si les sources de la sécrétion des follicules sont taries, il ne faut pas espérer les rouvrir et se bercer d'un espoir qui est au-dessus des ressources de notre art. Cépendant il importe de ne pas trop se hâter d'arriver à cette conclusion, et l'on ne doit s'avouer vaincu que lorsqu'on a longtemps mis en usage les prescriptions que je viens de formuler.

2° *Action des excès de coït sur les désirs vénériens.* — Esquirol, d'après des tableaux statistiques qu'il avait dressés à la Salpêtrière, établit que l'aliénation mentale est excessivement fréquente parmi les prostituées, mais que rien n'est plus rare chez elles que le délire érotique, que ce délire soit chronique, comme dans la folie, ou qu'il soit le résultat de fièvres ou de maladies aiguës.

En raisonnant par déduction, il faut admettre que la passion érotique est bien affaiblie chez les prostituées, puisque le délire, qui est ordinairement le miroir dans lequel viennent se réfléchir les passions dominantes, ne porte que très-rarement l'empreinte des idées vénériennes, et que, par conséquent, le métier auquel elles sont condamnées, c'est-à-dire les excès de copulation, n'est pas étranger à cet alanguissement de l'aiguillon sexuel.

L'observation est ici d'accord avec la théorie ; les excès vénériens, comme toutes les choses dont on fait abus, engendrent la satiété, et, par suite, l'indifférence. Le monde nous offre, dans les deux sexes, des exemples nombreux de cette satiété ; aujourd'hui où les jouissances de l'amour sont souvent cueillies par un âge qui se devrait seulement préparer à les savourer, on rencontre à chaque pas de ces jeunes blasés qui se font honneur de la sécheresse de leur cœur et qui, au besoin, étaleraient volontiers l'impuissance et la flétrissure de leurs organes.

La femme ne se soustrait pas plus que l'homme aux suites inévitables de la satiété ; elle ne jouit pas de l'heureux privilége de garder en son âme, alors qu'elle abuse de ses organes génitaux, les aspirations amoureuses et les désirs vénériens qui la remplissaient naguère. Le vide se fait également en elle, et alors elle tombe dans cet état d'apathie morale caractérisée par la suspension ou la ruine de tout sentiment.

Quand il n'y a que suspension, la nature, si on la seconde par le repos génésiaque et par une excitation morale habilement conduite, la nature, dis-je, finit toujours par reprendre ses droits et par restituer à la femme les mobiles sensuels qui la font se rapprocher de l'autre sexe.

Quant à l'abolition définitive des désirs copulateurs à la suite d'excès vénériens elle est très-rare, et elle n'a guère lieu que lorsqu'elle s'accompagne de la frigidité physique. Dans ce cas, toutes les ressources de l'art sont inutiles, et la femme est en quelque sorte dans un sexe neutre. Mais je le répète, ces cas sont plus rares qu'on ne pense, et il suffit souvent, pour voir renaître les désirs, de substituer au libertinage une continence soutenue par les distractions, et en même temps irritée par des excitations puisées surtout dans le domaine du moral.

EXCÈS DE PERVERSION DU SENS GÉNITAL. — Les formes sous lesquelles peut se présenter la perversion génitale sont aussi nombreuses que les aberrations d'une imagination déréglée. Sans parler du *fellator* et du *cunnilingus* (1), je ne citerai, parmi les vices les plus communs, que l'onanisme, la tribadie et la sodomie.

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(1) Pour toutes ces aberrations érotiques voyez, outre les poëtes de la décadence romaine : 1° *Erotika Biblion*, par Mirabeau, 1783, in-8 ; 2° *Histoire de la syphilis dans l'antiquité*, par Rosenbaum, traduit par Santlus, 1847, in-8, etc., etc.

Comme les observations que l'on peut faire sur chacun d'eux s'appliquent à toutes ces perversions du sens génital, je ne m'occuperai — et l'on comprend pourquoi — que de la plus fréquente et la mieux acceptée, je veux dire l'*onanisme.*

Excès de masturbation. — Tous les auteurs qui ont pris la masturbation pour sujet de leurs études se sont plu, dans une intention louable sans doute, mais qui bien souvent n'a pas atteint le but qu'ils se proposaient, se sont plu, dis-je, à rembrunir sans mesure les couleurs avec lesquelles ils peignaient les maux qu'entraîne cette funeste habitude; l'ouvrage de Tissot est resté, sous ce rapport, un livre classique.

Si ce n'était pas sortir de mon cadre, il serait facile de prouver combien ces peintures sont tout à la fois exagérées, inutiles, et même dangereuses; la stricte vérité est suffisamment hideuse par elle-même, pour qu'il ne soit pas nécessaire de la charger d'images purement imaginaires.

Cependant il est incontestable que les excès d'onanisme attaquent la vie dans sa source et pervertissent quelquefois la sensibilité d'une manière étrange. A notre point de vue la perversion que je viens de signaler se porte moins sur la sensibilité physique que sur la sensibilité morale; car sous le rapport organopathique, la sensibilité générale est bien plus souvent atteinte que la sensibilité génitale.

Mais celle-ci, par suite des troubles apportés dans la sensibilité morale, ne se soustrait point à l'influence néfaste de l'onanisme; elle la subit d'une manière bien réelle, quoique indirecte, et mérite par conséquent que l'on s'y arrête.

Le masturbateur, quel que soit le sexe auquel il appartienne, finit toujours par se complaire exclusivement dans ses plaisirs solitaires, et passe progressivement, vis-à-vis de l'autre sexe, de l'indifférence à l'aversion la plus prononcée. — Ce caractère est constant et a été noté par tous les observateurs. — Je ne cherche point à en trouver les motifs dans une timidité poussée à l'extrême, ou dans un sentiment exagéré de la pudeur; car si la timidité ou la pudeur peuvent être le point de départ, ou mieux encore, l'excuse de la masturbation, elles ne sauraient être la source de la perversion qui affecte la sensibilité morale. L'habitude ne me paraît pas davantage rendre raison du trouble que je signale, et je préfère le considérer comme un désordre morbide intimement lié à l'onanisme, ainsi que le sont la consomption, le rachitisme, la folie, etc.

D'ailleurs l'éloignement pour les plaisirs du coït n'est pas la seule atteinte qu'éprouve le moral qui, sans parler de l'affaiblissement profond des facultés intellectuelles, peut aller jusqu'à la folie et la démence : tout le monde sait que le masturbateur se révèle par un cachet tout particulier de son être moral, et que je n'ai pas à faire ressortir ici.

La répugnance que le masturbateur éprouve pour les rapports sexuels n'est en aucune façon comparable à la satiété qu'engendrent les excès de coït : ceux-ci étouffent la voix des voluptés génésiaques, quelle que soit d'ailleurs l'image sous laquelle se présentent ces voluptés, tandis que les excès d'onanisme ne glacent que les désirs de la copulation, et laissent subsister, s'ils ne l'augmentent encore, l'ardeur pour les plaisirs solitaires.

Sans doute la frigidité que ces habitudes entraînent n'est, à proprement parler, qu'une frigidité relative, puisqu'il reste à la sensibilité génitale un mode de manifestation. Cependant, en rentrant dans les lois de la physiologie, et en considérant que l'onanisme n'est pas l'excitation naturelle de la sensibilité génitale, on peut dire que l'aversion éprouvée par les masturbateurs à l'endroit du rapprochement sexuel constitue un état morbide du moral, aggravé par la perversion de la sensibilité génitale.

C'est donc à la cause première de tous ces désordres, c'est-à-dire à l'onanisme, que la médication doit d'abord s'adresser; ce n'est qu'après l'éloignement définitif de cette cause que l'on peut, s'il en est besoin, ramener dans la voie normale l'excitant vénérien qui s'épuisait en des plaisirs solitaires.

Je n'ai pas à raconter tous les moyens mis en usage, prières, menaces, terreurs, appareils protecteurs ou contentifs, etc., etc., pour prévenir ou combattre la funeste habitude de la masturbation; les ouvrages de Tissot (1), de Deslandes (2) et de Fournier (3) renferment, sur ces divers points, des instructions précieuses et auxquelles je renvoie.

Cependant le point de vue spécial sous lequel je suis ici placé, c'est-à-dire la masturbation chez la femme, me fait un devoir d'insister sur un moyen que les auteurs cités plus haut n'ont pas suffisamment indiqué, et qui m'a bien souvent réussi, alors qu'avaient échoué toutes les ressources ordinaires du raisonnement et de l'intimidation.

Ce moyen est la mise en jeu du sentiment maternel, auquel bien peu de femmes sont insensibles. Nous verrons plus loin quelle est l'influence exercée par la masturbation sur les facultés procréatrices de la femme; en attendant, il nous suffit de savoir que cette influence est acceptée comme néfaste par les gens du monde, et que le médecin est toujours cru quand il fait remonter jusqu'à elle la stérilité future ou présente d'une femme.

Il peut même aller plus loin, et réveiller, toujours au nom du sentiment de la maternité, les désirs et les plaisirs sexuels que l'onanisme avait glacés; il suffit d'évoquer la nécessité de la volupté dans le coït, pour que l'imagination retrouve les douces images, et par suite les ineffables sensations, compagnes de l'amour.

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(1) Tissot, *Onanisme, dissertation sur les maladies produites par la masturbation.*

(2) Deslandes, *De l'onanisme et des autres abus vénériens considérés dans leurs rapports avec la santé.* Paris, 1835, in-8.

(3) Fournier, *De l'onanisme, causes, dangers et inconvénients pour les individus, la famille et la société*, 2ᵉ édit, Paris, 1876.

Mais qu'en de pareils conseils préside une sage prudence; car presque toutes les femmes savent que la fécondation ne s'accomplit pas fatalement au sein de la volupté, et elles pourront sur ce point citer l'exemple de telles ou telles de leurs amies qui sont devenues enceintes au milieu de l'indifférence vénérienne la plus complète. Il faut, en semblable circonstance, prévenir tout conflit entre le médecin et la malade, parce que celle-ci, en une matière qu'elle croit être plutôt de la compétence de son sexe que de celle de l'homme de l'art, s'en réfère toujours à l'expérience acquise soit par elle-même, soit par ses compagnes; aussi, je le répète, la plus grande circonspection doit être observée sur ce point, et l'on verra plus loin, alors que j'établirai les conditions nécessaires à la fécondation, les arguments que l'on peut tirer de la présence ou de l'absence du plaisir pour la génération.

Mais si le médecin échoue sur ce point, c'est-à-dire s'il ne peut convaincre la femme de la nécessité du plaisir sexuel pour la fécondation, ou s'il s'adresse à une femme enceinte ou déjà mère, il lui reste la ressource de plaider la cause des enfants, et de les lui montrer frappés de rachitisme ou de scrofule : rarement une femme résiste à de pareils arguments, car dans ses rêves dorés de jeune fille ou de mère, elle donne à ses enfants une beauté idéale et une santé impossible.

Je le répète, le sentiment de la maternité, adroitement dirigé, est, chez les masturbatrices, un moyen puissant, non-seulement pour les arracher à leurs funestes habitudes, mais encore, dans quelques circonstances, pour éveiller en leur imagination les tendres pensées et les amoureux désirs.

CHAPITRE V

FRIGIDITÉ MORALE

Pas plus chez la femme que chez l'homme, les conditions du plaisir vénérien ne sont indépendantes de la sensibilité générale, soit physique, soit morale, et tous les troubles de cette sensibilité, alors même qu'ils n'ont pour théâtre qu'un appareil et même qu'un organe, retentissent plus ou moins sur le sens copulateur, selon les relations plus ou moins étroites qui unissent cet appareil ou cet organe avec celui de la génération.

En parlant de l'impuissance sympathique chez l'homme, j'ai dit que les appareils qui entretenaient avec le sens génital les relations les plus intimes, et dont les désordres y trouvaient par conséquent un écho plus sûr et plus direct, étaient l'appareil digestif et l'appareil cérébral, en comprenant dans ce dernier les fonctions de l'innervation et les facultés du moral.

Chez la femme, les mêmes rapports existent, mais ils n'ont d'influence que sur deux conditions du coït normal, les désirs et le plaisir vénériens ; tandis que chez l'homme ils peuvent s'opposer à la manifestation de toutes les circonstances reconnues nécessaires pour la copulation, c'est-à-dire l'érection de la verge, l'éjaculation du sperme, et enfin le plaisir.

Cependant, quand on considère que, chez la femme, les désirs et la volupté érotiques constituent tout le rôle actif qu'elle joue dans le coït, et que c'est précisément sur ces désirs et cette volupté qu'agissent sympathiquement les troubles de l'innervation ou ceux du moral, on est conduit à admettre que l'action de ces sympathies est identique chez l'homme et chez la femme, car dans l'un et dans l'autre, cette action n'est évidente que dans la portion active de leur rôle respectif.

Pourtant toute sympathie, soit physiologique, soit morbide, n'a pas la même importance chez les deux sexes : ainsi, par exemple, l'influence de la réplétion stomacale est bien moins sensible chez la femme que chez l'homme, tandis, au contraire, que l'influence morale, par suite de l'éducation, du sentiment de pudeur, d'une sensibilité plus exquise, etc., est bien plus marquée chez elle que chez l'homme. Rondelet cite l'exemple d'une femme qui tombait dans des attaques de catalepsie toutes les fois qu'elle était en congrès avec son mari, qu'elle n'aimait pas et qu'on lui avait fait épouser par force.

Cependant, quoique les sympathies sur la faculté voluptueuse se manifestent dans les deux sexes à des degrés divers, leur action est identique, et le chapitre que je leur ai consacré, dans la partie de cet ouvrage relative à l'impuissance de l'homme, est tellement applicable à la frigidité sympathique de la femme, que je ne saurais y ajouter rien de plus, et que j'y renvoie le lecteur.

LIVRE DEUXIÈME

DE LA STÉRILITÉ

La stérilité est l'inaptitude à la procréation.

Comme la procréation, il est bien entendu qu'il ne s'agit ici que de l'espèce humaine, comme la procréation exige la coopération de deux individus à organisation génitale différente, la nature n'a pas plus garanti à l'un l'immuable intégrité des conditions de son concours, qu'elle n'a réservé à l'autre toutes les altérations capables de s'opposer à l'accomplissement de cette importante fonction ; elle a tenu entre les deux sexes une balance impartiale, et les a condamnés, chacun dans les limites de ses attributions respectives, à des états morbides divers, dont l'étude fait le sujet de ce livre.

Nous aurons donc à examiner les états morbides susceptibles d'entraîner l'inaptitude à la procréation : 1° chez l'homme ; 2° chez la femme.

Mais à côté de ces altérations organiques, qui, chez l'un comme chez l'autre sexe, nous rendront compte du trouble de la fonction, n'y a-t-il pas des conditions générales qui, sans se rattacher aux circonstances de l'âge, de l'état de maladie, du climat, etc., etc., semblent exercer une influence fâcheuse sur l'acte de la génération ? En d'autres termes, faut-il admettre, à l'exemple de mes devanciers, que la nécessité du concours de deux individus à organisation différente crée des conditions de synergie morale et physique, dont le dérangement constitue un autre ordre de causes d'agénésie et marque une nouvelle stérilité ? Peut-être ; mais dans tous les cas, la question est assez importante pour mériter d'être examinée.

Je vais donc passer en revue les circonstances qui ont pu faire croire à une absence d'*harmonie d'amour*, comme dit Virey, capable d'empêcher la fécondité entre deux individus présentant tous les attributs de la puissance procréatrice.

§ I. — Stérilité relative.

Si l'on considère, d'une part, le mystère au milieu duquel s'accomplit la fusion des deux éléments générateurs, et, d'autre part, la retraite presque inaccessible à nos moyens d'investigation, où sont tenus la plupart des organes qui concourent à l'accomplissement de cet acte, on avouera qu'il est facile de méconnaître, dans beaucoup de cas, la cause réelle d'une stérilité, et l'on trouvera moins extraordinaire que l'esprit humain, à qui, en définitive, il faut toujours une explication, bonne ou mauvaise, ait admis des hypothèses complétement imaginaires, et autour desquelles sont venus se grouper, ou de gré ou de force, tous les faits qui sortaient des lois les plus vulgaires de la pathologie.

Parmi ces hypothèses, il en est une qui a joui d'un grand crédit et qui est encore aujourd'hui même entourée de la faveur générale, c'est celle que l'on désigne communément sous le nom d'*harmonie d'amour*.

Cette harmonie a pour base des rapports soit de similitude, soit de dissemblance, et se tire tantôt de la nature physique et tantôt de la nature morale des deux conjoints. « Comment, s'écrie Virey, qui a consacré à la défense de cette opinion les phrases les plus redondantes de son style imagé, comment s'établit l'amour le plus pénétrant, le plus parfait entre les sexes? C'est lorsque la femme est le plus femelle, et que l'homme est le plus viril; c'est quand un mâle brun, velu, sec, chaud et impétueux, trouve l'autre sexe délicat, humide, lisse et blanc, timide et pudique. L'un doit donner, et l'autre est constituée pour recevoir; le premier, par cette raison, doit avoir un principe de surabondance, de force, de générosité, de libéralité qui aspire à s'épancher; la seconde, au contraire, étant constituée en *moins*, doit, par sa timidité, tendre à recueillir, à absorber, avec une sorte de besoin et d'économie, le *trop* de l'autre, pour établir l'égalité, le niveau complet. Ainsi le résultat de l'union conjugale, ou but de la procréation d'un nouvel être, ne peut être rempli que par cette unité physique et morale dont parlent Pythagore et Platon, au moyen de laquelle les deux sexes s'égalent, se saturent pour ainsi dire réciproquement (1). »

Et, comme si ces paroles ne rendaient pas toute sa pensée, et qu'il craignît qu'on ne les appliquât qu'à la partie sensuelle ou attractive de la fonction de la génération, Virey revient plus loin sur son système d'harmonie et en montre toute l'influence sur la fécondité : « En effet, dit-il, si l'on unit deux tempéraments semblables, mâle et femelle, comme Voltaire et la marquise du Châtelet, qui ne pouvaient ni se quitter, ni se souffrir longtemps ensemble, cette similitude d'égalité produit une source de querelle, et devient une cause de stérilité très-remarquable. Ainsi l'on a vu deux époux, ensemble stériles, et s'accusant même d'impuissance et de froideur, devenir par leur divorce, féconds et ardents avec d'autres individus d'une constitution opposée, etc. (2). »

Cette théorie est si ingénieuse et plaît tant à l'imagination, que chaque auteur qui l'a adoptée semble, pour le dire en passant, s'en attribuer la paternité; cependant, elle appartient à Aristote, qui, en ce point, s'éloigne des idées hippocratiques : « *Evenit sane*, dit-il, *multis et mulieribus et viris, ut qui canjuncti inter se nequeant procreare, ubi dissociati se junxere cum aliis, queant* (1). » Boerhaave va plus loin, et, après avoir avancé qu'Aristote rapportait des exemples en faveur de cette théorie, ce qui n'existe pas, car le passage que je viens de citer n'est accompagné d'aucune observation, il raconte lui-même le fait suivant : « *In Galliâ illustris casus contigit : princeps (S. G., nobilis) erat qui diù cum optimâ uxore in sterili conjugio vixerat. Ultimo ex judicio supremæ curiæ conjugium solutum est. Eodem concilio capto, maritus in viduum thorum aliam uxorem ducit, et vidua nupsit alteri ; et ille filios, hæc prolem pariter ex secundo conjugio tulit.* » Et Boerhaave ajoute : *Apparet fecunditatem etiam a mutuâ quâdam ratione pendere posse, absque ullo absoluto vitio aut viri aut feminæ* (2). »

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(1) Virey, *De la femme, sous ses rapports physiologique, moral et littéraire*. Paris, 1825, p. 195.

(2) *Ibid.*, p. 207.

Tous les auteurs qui ont écrit sur la matière sont aussi laconiques que Boerhaave; nulle part une indication même sommaire de l'état des organes génitaux : ces organes, qui jouent cependant le principal rôle, sont comme s'ils n'existaient pas. On comprend cette absence de détails de la part d'un historien, comme Tacite, par exemple, qui rapporte que Livie, n'ayant pas eu d'enfant avec César, quoiqu'elle en fût tendrement aimée, donna le jour à Tibère et à Drusus dans un second mariage qu'elle contracta avec Tibère-Néron.

Sans doute, par cela même que deux individus sont nécessaires pour la formation d'un nouvel être, les conditions de ce concours sont soumises à des lois dont la violation, compromettant l'intégrité de ces rapports, en doit nécessairement annihiler les résultats ordinaires ou normaux.

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(1) Aristote, *Historia animalium*, t. II, 1597, lib. VI, p. 139.

(2) Boerhaave, *Prælectiones academicæ*, etc. Leyde, 1761, t. II, p. 256.

Quelle est donc la loi de ces rapports? Repose-t-elle sur la dissemblance ou sur la similitude des conjoints, et, dans l'un ou l'autre cas, cette harmonie naît-elle du contraste ou de l'homogénéité des habitudes générales de l'organisme, ou se contente-t-elle des mêmes conditions dans l'appareil génital seulement? En d'autres termes, la fécondité obéit-elle à la loi des contrastes ou à celle des ressemblances, dans l'intelligence, dans les passions, dans le tempérament, dans la constitution, dans l'ardeur des plaisirs vénériens, etc., etc., en un mot dans des circonstances éloignées de l'appareil générateur?

Il ne faut pas une bien longue observation pour se convaincre que, si la théorie des contraires ou celle des semblables peut-être invoquée pour la manifestation des sympathies amoureuses, quoique les anciens, aussi bons observateurs que nous, aient mis un bandeau sur les yeux de l'Amour, il ne faut pas une longue observation, dis-je, pour se convaincre que l'une et l'autre de ces théories sont complétement erronées quand il s'agit de la fécondité; il suffit de regarder autour de soi: dans ce tourbillon immense qui constitue le monde, on voit l'espèce se perpétuer au milieu des conditions les plus diverses, et chaque procréation, pour ainsi dire, donner un démenti aux rêves harmoniques des philosophes et des poëtes.

Cependant, il est des faits étranges qui semblent établir d'une manière irréfragable une loi quelconque de rapports; ce sont ceux dans lesquels deux individus, homme et femme, voient leur union stérile, alors que chacun d'eux donne de son côté des preuves manifestes de fécondité.

Mais d'abord ces faits sont moins communs qu'on ne pourrait croire, et, loin d'être la règle, ils constituent une très-grande exception; il n'est donc pas logique de fonder sur eux une loi fondamentale et d'ériger une exception en axiome inexorable.

Cependant, quelques rares qu'ils fussent, ces faits, par cela même qu'ils se produisaient, ont vivement excité mon attention, et j'ai dû, pour me former une opinion sur leur compte, ne pas me contenter de simples apparences.

A cet effet, j'ai cherché, autant que me le permettait l'état de nos connaissances anatomiques et physiologiques, à me rendre compte des conditions normales de fécondité chez l'un et chez l'autre sexe, et je me suis assuré ensuite si, dans les cas exceptionnels dont il s'agit, ces conditions étaient intactes et s'accomplissaient d'après les principes acquis à la science.

Il est nécessaire de rappeler brièvement ces conditions et ces principes.

Du côté de l'homme :

Éjaculation dans la direction de l'axe de la verge et propriété spéciale (fécondante) d'un liquide appelé sperme.

De ces deux conditions, la dernière, c'est-à-dire la composition du sperme, est acceptée sans conteste. Ce n'est pas ici le lieu d'exposer cette composition ; il suffit simplement d'en marquer l'absolue nécessité.

L'éjaculation, c'est-à-dire le lancement du sperme avec une certaine force, n'a rien perdu de son importance, quoi qu'on en veuille dire, par les expériences de Spallanzani ; je crois donc la fécondation, dans l'espèce humaine, très-difficile, sinon impossible en dehors de cette condition, à moins que les deux conjoints n'aient recours à un artifice qui supplée en quelque sorte à l'éjaculation, ou que la femme ne soit affectée d'un prolapsus de matrice.

La direction, suivant laquelle s'accomplit l'éjaculation, ne me semble pas aussi une circonstance sans valeur ; je sais bien que tous les hypospades ne sont pas stériles, et je tiens même de M. Ricord que ce vice de conformation s'est montré à lui d'une manière héréditaire sur trois générations, preuve bien évidente qu'aucune d'elles ne fut inféconde; mais, en admettant l'explication que je donne plus loin (1) du mécanisme de l'éjaculation directe de l'hypospadias balanique, il faut reconnaître que ces faits forment une exception, et que, dans l'immense majorité des cas, la fécondation n'a lieu qu'à la suite d'une éjaculation spermatique dans le sens de l'axe du canal uréthral.

Du côté de la femme, les conditions anatomiques ont, jusqu'à présent, paru seules nécessaires pour sa fécondation, et c'est à l'oubli dans lequel ont été laissées plusieurs autres circonstances, qu'il faut peut-être rapporter les incertitudes et l'ignorance qui planent encore aujourd'hui sur cette partie de a pathologie féminine.

Cependant quelques-unes de ces circonstances ne sont pas entièrement méconnues, et la discussion soulevée à l'Académie de médecine (2), à l'occasion du pessaire intra-utérin, a prouvé que les meilleurs esprits et les hommes les plus pratiques admettaient les déviations utérines parmi les causes de la stérilité dela femme.

Je m'expliquerai longuement ailleurs sur l'importance des déplacements utérins au point de vue qui nous occupe; mais je dois établir ici, pour l'intelligence de ce qui va suivre, que, dans un très-grand nombre de cas, et principalement dans les cas de version, ces déplacements, ne faisant qu'altérer les rapports normaux de conjonction, déterminent une stérilité qui n'est ni relative ni maladive, mais simplement l'effet du défaut d'exacte opposition de l'organe mâle et de l'organe femelle.

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(1) Voyez les *Causes de la stérilité chez l'homme par vice de conformation.*

(2) *Bulletin de l'Académie de médecine.* Paris, 1854, t. XIX, p. 628 et suiv.

Pour moi, en effet, il est hors de doute que, dans les conditions normales de fécondation, le méat urinaire du membre viril doit se trouver en face de l'ouverture inférieure de la matrice, afin que le sperme puisse pénétrer dans ce dernier organe, en sortant par saccades de la verge de l'homme; et que toutes les fois que, par un motif quelconque, cette mise en présence de l'orifice uréthral de l'homme et de l'orifice utérin est détruite, la fécondation n'a pas lieu; c'est ce qui arrive, en effet, dans les cas de déviation antérieure, postérieure ou latérale de l'utérus, dans lesquels la verge, portée sur les côtés du col de la matrice, lance le sperme contre le cul-de-sac vaginal, que vient battre sans profit le fluide fécondant. Et cela est si vrai, que si les conjoints, par un artifice de position, ou l'art, par des moyens dont j'aurai à m'occuper ailleurs, parviennent à rétablir l'axe fictif des deux orifices dont il s'agit, la stérilité cesse aussitôt, en admettant, bien entendu, qu'il n'existe pas d'autres causes d'agénésie, et la femme, jusqu'alors inféconde, peut, comme on va le voir dans les deux faits suivants, donner le spectacle d'un de ces faits réputés étranges par les esprits superficiels.

Après cinq années d'un mariage stérile, madame X... a des rapports avec un jeune homme, et, à son grand étonnement, elle devient enceinte; je dis à son grand étonnement, parce que le mari, ayant eu des enfant avec une de ses domestiques qu'il avait séduite, madame X... croyait porter en elle seule la cause de l'infécondité qui avait frappé la couche conjugale. En présence d'une grossesse aussi inattendue, il fut démontré aux deux amants que la stérilité dont la dame X... avait été affectée pendant cinq années, alors qu'elle n'avait eu de relations qu'avec son mari, était bien réellement produite par un défaut d'harmonie entre les deux époux.

Lié d'amitié avec l'amant, et par suite de circonstances qu'il est inutile de rapporter ici, je fus mis dans le secret de l'aventure. Comme le fait me paraissait bizarre et que je n'avais, d'autre part, aucun moyen de vérification, ne connaissant pas madame X..., j'en fus réduit aux explications bien superficielles que me donnait le jeune homme; cependant une circonstance, à laquelle les deux amants n'avaient prêté aucune attention, me frappa : c'est que dans leurs ébats amoureux, le coït avait été accompli plusieurs fois dans une position anormale, et surtout différente de celle que le mari avait l'habitude de prendre.

Je ne pouvais contrôler les suppositions que me suggéraient ces confidences; d'ailleurs, eussé-je pu soumettre madame X... à mes investigations, que cet examen n'aurait probablement pas amené une certitude, car si, comme je le supposais, la stérilité de madame X... tenait à une déviation utérine, ce déplacement devait avoir disparu, ainsi qu'il arrive par l'effet de la gestation.

Je ne pus donc retirer aucun enseignement positif de ce fait; mais il me donna l'éveil sur la possibilité de certaines circonstances trop négligées jusqu'alors, et de la valeur desquelles il était facile de s'assurer.

L'occasion s'en offrit bientôt à moi.

M. X..., habitant la rue des Vieux-Augustins, marié depuis six ans, sans enfants, vint me consulter sur la cause de l'infécondité de son mariage. Soumis à un examen sévère, tant sous le rapport de ses organes que de son sperme, et à un interrogatoire minutieux sur toutes les circonstances qui accompagnaient le coït, il me parut n'avoir en lui aucun motif de stérilité, et je le priai, en conséquence, de décider sa femme à subir mes investigations.

Le désir que celle-ci éprouvait d'avoir des enfants leva tous ses scrupules; petite, mais bien conformée, d'un tempérament lymphatico-nerveux, madame X... avait été réglée de quinze à seize ans, et depuis cette époque (elle en avait alors vingt-quatre) elle avait été régulièrement et assez abondamment menstruée. Quelques flueurs blanches existaient, mais en très-faible abondance; seulement elles augmentaient un peu, ainsi qu'il arrive chez beaucoup de femmes, aux époques menstruelles.

Les désirs vénériens étaient modérés, et le coït n'offrait rien d'anormal au point de vue des manifestations voluptueuses.

L'examen abdominal ne laissa rien soupçonner du côté de la matrice et de ses annexes; mais le toucher vaginal me fit constater une déviation antérieure du col de l'utérus, avec renversement en arrière du corps de cet organe.

Ce déplacement de l'organe gestateur me parut être la cause de la stérilité.

S'il en était ainsi, la fécondation devait s'opérer, si, par un artifice quelconque, le col de l'utérus était ramené dans son axe normal, ou plutôt dans l'axe du plan suivant lequel s'opérait l'éjaculation de l'homme.

Deux moyens s'offraient à l'esprit :

Ou changer la position du col de l'utérus et faire rentrer, ne fût-ce que momentanément pendant le coït, le museau de tanche dans la direction du jet spermatique; ou, par un artifice de position pendant l'accouplement, modifier la direction de ce jet, de sorte qu'elle ne fût plus celle de l'axe du vagin, mais qu'elle fût portée en avant et en haut.

Je m'arrêtai au premier de ces moyens, qui était tout à la fois le plus médical et le plus décent.

Un tampon, porté dans le rectum, aida, non à faire basculer l'utérus, ce qui me paraît fort difficile, mais à le porter et à le soutenir dans un plan moins incliné.

En même temps que je plaçai ce tampon, je ramenai, autant que je le pus, le col de la matrice en arrière, et je glissai entre lui et la paroi antérieure du vagin un cylindre préparé d'éponge. Cette espèce de coin, dont le volume devait nécessairement augmenter par les mucosités dont sa présence rendait la sécrétion plus abondante, avait pour mission de maintenir le col dans l'axe du vagin, et d'exposer ainsi le museau de tanche au jet direct de la liqueur spermatique.

Le coït fut accompli au milieu de ces conditions, qui ne le gênaient d'ailleurs en rien ; le mois suivant les règles, contre leur habitude, ne parurent pas ; madame X... était enceinte. Sa grossesse n'offrit rien de remarquable ; elle est accouchée l'année dernière à Sens, son pays natal, et je ne puis dire, ne l'ayant pas revue depuis, si elle a eu une seconde fécondation.

Pour le fait que je viens de rapporter, je me suis demandé si la présence de l'éponge, appliquée contre les surfaces antérieures du vagin et du col utérin, n'avait pas été la source d'une excitation absente du museau de tanche, et nécessaire, comme je l'ai dit plus haut, pour la fécondation de la femme.

Sans doute, on peut, jusqu'à un certain point, faire une part quelconque à cette influence ; mais cette part doit être bien minime, si on la compare à celle qui revient au changement de position éprouvé par le col utérin ; d'ailleurs, dans d'autres circonstances que je ne puis rapporter ici, cette excitation a complétement fait défaut, car il n'y avait de modifié que la direction du jet spermatique.

En résumé, les déviations du col de l'utérus, sur lesquelles je m'expliquerai plus longuement ailleurs, constituent fréquemment une cause de stérilité chez la femme ; mais l'obstacle que ces déviations apportent à la fécondation n'étant pas autre chose qu'un défaut de rapports topographiques entre l'organe chargé de donner et l'organe appelé à recevoir, il advient que ces rapports, brisés dans certaines circonstances, peuvent se rétablir dans d'autres, et alors, on a le spectacle de gestations tardives ou de fécondations relatives, sans qu'il soit besoin de recourir aux explications métaphysiques des harmonies ou des contrastes.

Cependant, il ne faudrait pas croire que toutes les grossesses tardives ou relatives se peuvent expliquer par une déviation utérine; l'erreur que je combats eût été trop grossière et m'aurait donné trop facilement beau jeu.

En effet, à côté des conditions anatomiques, dont il est superflu de parler ici; à côté des conditions de topographie, qu'on me passe le mot, dont il vient d'être question, il en existe une autre que j'appellerai condition physiologique ou vitale.

Qu'on me permette de légitimer ces expressions.

Chaque tissu, chaque organe, chaque appareil possèdent, en dehors de la sensibilité générale à laquelle sont soumis tous les corps organisés, une sensibilité spéciale qui les caractérise et qui leur est propre. Cette sensibilité se développe sous l'empire d'excitants spéciaux, dont l'influence est nulle sur les autres tissus, sur les autres organes, sur les autres appareils. — C'est l'*alpha* de la physiologie.

A cette sensibilité succède la contractilité, d'une manière si fatale, que l'on a désigné par le seul mot *irritabilité* et la sensation excitée sur l'organe par l'impression du corps étranger et la contraction de l'organe réagissant sur ce corps.

Cette action et cette réaction ne sont pas nécessairement sous l'empire de la conscience; ces deux opérations peuvent s'exécuter en dehors de notre volonté.

L'utérus et, plus particulièrement, son col ne font pas exception à cette loi physiologique. Ils ont une irritabilité spéciale dont le moteur est le fluide spermatique, sous l'influence duquel le col se ramasse sur lui-même, pour ainsi dire, en présentant, béante, son ouverture inférieure.

Cette irritabilité n'est ni sous la dépendance de la volonté, ni sous l'empire de la conscience; si elle eût été soumise à la volonté, la femme aurait pu se soustraire à l'obligation de la gestation, et la nature n'a pas voulu que la volonté, qui acceptait le plaisir, eût le pouvoir de repousser la fonction dont ce plaisir n'était que la récompense; elle est également indépendante de la conscience, car cette indépendance est pour la nature une garantie certaine de la bonne exécution de l'acte; aussi faut-il ranger, parmi les illusions de l'imagination, les tressaillements et les spasmes particuliers que certaines femmes prétendent ressentir au moment d'un coït fécondant. — Il est manifeste qu'il ne s'agit point ici des tressaillements et des spasmes amoureux qui atteignent leur plus haut degré d'intensité pendant l'éjaculation de l'homme, par suite des mouvements spasmodiques auxquels la verge est alors en proie, et par suite aussi de l'élévation de température, déterminée, tout à la fois par l'action vitale de l'acte qui s'accomplit, et par la présence du sperme.

L'irritabilité utérine, celle qui nous occupe ici, est spéciale et ne s'exerce que sous l'influence du fluide spermatique.

J'ai poussé, sur le museau de tanche de divers animaux, des liquides de différentes sortes, excitants, astringents, caustiques, etc., et jamais l'utérus, immédiatement ouvert, ne m'a fourni la moindre trace du liquide injecté.

On a rapporté aux tressaillements amoureux, à la sensation de volupté la source de cette irritabilité; mais alors comment expliquer la fécondation de ces femmes insensibles au plaisir, de ces jeunes filles violées et prises de force, et pour lesquelles la copulation est un sujet d'effroi et de douleur? Non, le plaisir n'est pas plus l'excitant de cette irritabilité, que les liquides dont je parlais tout à l'heure.

L'électricité, dont je dirai plus loin le rôle dans le traitement de certaines formes de stérilité, a-t-elle sur l'irritabilité de l'utérus une action marquée et manifeste?

Comme beaucoup de médecins, j'ai triomphé quelquefois de la stérilité au moyen de la faradisation; et les cas précisément où cet agent m'a paru avoir l'indication la plus précise, et où, en effet, le succès a couronné les tentatives, sont ceux où l'irritabilité de l'utérus, ou plutôt du col de l'utérus, semblait affaiblie et ne pas suffisamment répondre à l'action de son excitant ordinaire, le sperme.

Cependant, à l'état physiologique, si l'on dirige sur cette partie un courant galvanique, il advient, dans la très-grande majorité des cas, que la sensibilité et la contractilité de l'organe ne semblent en aucune façon influencées; seulement, si l'action électrique est prolongée pendant quelque temps, le col de la matrice se phlogose avec les phénomènes de rougeur, de chaleur et de tuméfaction qui, dans les circonstances ordinaires, accompagnent ou caractérisent cet état pathologique.

Aussi il est constant pour moi que, dans les cas où le fluide électrique exerce une heureuse influence sur la stérilité, cette action est due, non à une modification spéciale apportée par l'électricité, mais au rappel, dans le col de l'utérus, des conditions normales de la vitalité générale.

Je ne puis donc admettre que l'électricité, malgré les services qu'elle rend dans l'affaiblissement de l'irritabilité utérine, soit un excitant spécial de cette irritabilité.

Ce rôle, je le répète, appartient exclusivement au sperme.

Mais, pour faire une juste part à toute chose, il faut reconnaître que les émotions amoureuses et que les sensations voluptueuses, en éveillant la sensibilité générale de l'appareil génital, sont le premier signal et comme le prélude de l'irritabilité spéciale de l'utérus; il peut donc arriver ou que cette irritabilité, n'étant point éveillée par les caresses de l'homme, reste inerte sous l'action du sperme; ou que, trop surexcitée par le tempérament passionné de la femme, elle dépasse le but au moment où lui arrive la nouvelle excitation de la liqueur séminale. — Ces deux circonstances opposées, absence et excès d'excitation du col utérin, amènent le même résultat, c'est-à-dire la non-pénétration du sperme dans l'utérus.

Ces deux espèces de stérilité sont, comme on le voit, sous l'entière dépendance de la sensibilité; or, quand on sait les influences multiples et diverses que subit la sensibilité, même organique, on comprend que cette sensibilité puisse se montrer en deçà ou en delà de l'excitabilité normale, selon le temps, l'âge, les habitudes, le milieu dans lequel on la place, etc., etc.; et alors on a le spectacle ou de ces fécondités tardives ou de ces fécondités relatives, pour l'explication desquelles on recourait, en désespoir de cause, au système de l'harmonie d'amour.

Une thérapeutique rationnelle vient souvent justifier ces données de la science, sans qu'il soit nécessaire de poursuivre une pondération, presque toujours impossible, entre les tempéraments et les facultés morales et intellectuelles des deux conjoints. La femme lymphatique, à fibres molles, à la vitalité languissante, trouve dans les toniques, dans les reconstituants, dans l'hydrothérapie et dans certaines eaux minérales, une fécondité que l'on rend, à une autre, en éveillant l'irritabilité utérine au moyen de l'électricité, et que l'on donne à une troisième, en calmant cette même irritabilité avec des sédatifs ou des antispasmodiques.

Si, à ces causes multiples et si mal appréciées jusqu'à présent de stérilité, on ajoute les altérations accidentelles des spermatozoïdes, et les avortements précoces dont je m'occupe plus loin, on se convaincra que les cas de stérilité relative doivent être excessivement rares ou, pour dire toute ma pensée, que la stérilité relative n'existe pas.

Le système de l'harmonie d'amour ne sert qu'à couvrir notre ignorance des causes de certaines stérilités, et qu'à satisfaire ce besoin de notre intelligence, de donner à toute chose une explication, fût-elle imaginaire.

En résumé, et telle est la conclusion que je tire des considérations qui précèdent, il y a trois sortes de stérilité : une qui est le fait de l'homme, une qui appartient en propre à la femme, et une troisième qui résulte d'un vice dans les rapports des conjoints.

Dans cette dernière espèce de stérilité, la seule qui m'ait occupé ici, le vice qui l'entraîne est toujours local : tantôt il est le résultat d'un déplacement d'organe, tantôt d'une modification vitale des tissus, et tantôt d'une altération passagère d'un des deux éléments reproducteurs, et même de l'organe gestateur.

Il n'y a donc pas de stérilité relative dans le sens que l'on a donné jusqu'à présent à ces mots, c'est-à-dire une stérilité basée sur des analogies ou des dissemblances générales.

Pour moi, toute stérilité relative est locale et doit s'expliquer par une des circonstances que je viens d'indiquer, c'est-à-dire défaut de concordance de l'organe mâle et de l'organe femelle; absence ou excès de la vitalité du col; altération momentanée des spermatozoïdes ou de l'ovule; enfin avortement précoce.

Par conséquent, la stérilité relative n'étant pas autre chose qu'un accident local, son histoire ne saurait exister; elle se confond avec celle des accidents locaux qui, chez l'homme ou chez la femme, déterminent la stérilité.

§ II. — Stérilité consanguine.

Jusqu'à l'avénement du christianisme, il n'est pas rare de trouver des peuples chez lesquels étaient permis les mariages entre les parents les plus rapprochés. Les Perses épousaient leurs sœurs et leurs mères; aussi, saint Jean Chrysostome s'écrie, après les avoir convertis : « Nous admirons les Perses qui n'épousent plus leurs mères (1). »

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(1) Saint Jean Chrysostome, *De virginitate*, cap. VIII.

Les Mèdes, les Éthiopiens, les Indiens et tous les peuples soumis à la loi de Zoroastre, comme les Perses, suivaient la même pratique.

En Phénicie, en Carie et en Égypte, les frères et les sœurs contractaient mariage, ainsi que le prouve l'histoire de la reine Artémise, qui fit élever un monument somptueux à Mausole, son époux, dont elle était en même temps la sœur.

Tandis qu'à Athènes un frère pouvait épouser sa sœur consanguine, à l'exclusion de sa sœur utérine, à Sparte le contraire avait lieu, et un frère épousait sa sœur utérine, à l'exclusion de sa sœur consanguine; la loi faisait même un devoir d'épouser son parent le plus rapproché, dans l'intérêt de la succession.

Jusqu'à Mahomet, qui frappa ces mariages d'interdiction, les Arabes épousaient leurs mères, comme les peuples obéissant à la religion de Zoroastre.

Sans pousser plus loin une énumération que l'on pourrait grossir, en feuilletant l'histoire des anciens Germains, des Danois, des Péruviens, etc., etc., il faut reconnaître que chez ces nations, dont la population était immense et la vitalité très-grande, ces unions entre parents très-rapprochés étaient loin d'être frappées de stérilité.

Le christianisme, comme je l'ai dit, insista, plus que toute autre religion, sur la défense des mariages entre parents, et l'Église établit les degrés jusqu'auxquels devaient s'étendre ces prohibitions.

La loi civile, imitant la loi canonique, repoussa de son côté les mariages entre parents d'un certain degré.

Beaucoup de bons esprits n'ont vu dans ces défenses que des raisons morales ou sociales, tandis que, de tout temps, les médecins les ont considérées comme d'excellents préceptes d'hygiène.

Jusqu'à ces dernières années, on croyait à certains dangers des unions consanguines, sans admettre pourtant tous les dommages dont, depuis quelque temps, on a voulu les rendre responsables.

Ces dommages ont été divisés en deux catégories, selon qu'ils sont relatifs aux parents, ou qu'ils sont relatifs aux produits.

Je n'ai pas à m'occuper de ces derniers, car mon rôle finit dès que la gestation commence.

Au point de vue des parents, la consanguinité a été accusée de déterminer :

1° La stérilité;

2° Le retard de la conception;

3° La conception imparfaite (fausses couches).

Devay (de Lyon), qui le premier souleva l'orage qui a si longtemps grondé à la société d'anthropologie, a dressé une statistique où, sur 121 mariages consanguins, les dommages relatifs aux parents se répartissent de la manière suivante (1) :

Stérilités absolues	16
Avortements précoces	6
Fausses couches	17

Mais dans l'énumération des dommages relatifs aux enfants, Devay énumère un bien plus grand nombre de mariages consanguins contre lesquels il ne peut invoquer ni la stérilité, ni les fausses couches.

Boudin, qui n'est pas moins convaincu que Devay de la nocuité des mariages consanguins, n'apporte aucun fait à l'appui de sa thèse, et se contente de l'opinion de l'évêque de Viviers (2), et de celle de quelques agronomes.

Mais, à côté de ces assertions, au contraire, les preuves abondent en faveur de l'innocuité des mariages consanguins sous le rapport de la conception.

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(1) Francis Devay, *Traité spécial d'hygiène des familles*. Paris 1846, 2e édit., 1858.

(2) Boudin, *Dangers des unions consanguines et nécessité des croisements dans l'espèce humaine et parmi les animaux* (*Annales d'hygiène publiq. et de méd. légale*, juillet, 1862).

Bourgeois (1) cite l'histoire de sa propre famille, issue d'un couple consanguin, marié il y a cent trente ans, et qui compte quatre cent seize membres. Il y a eu quatre-vingt-onze unions toutes fécondes, dont soixante-huit consanguines, parmi lesquelles seize surchargées de consanguinité superposée. Cependant on n'a constaté dans cette famille ni avortements, ni retards de conception.

Après ce fait excessivement remarquable, le même auteur raconte plus succintement l'histoire de vingt-quatre autres unions consanguines, également suivies de conceptions toujours heureuses.

Seguin (2) a noté un cas de stérilité sur dix mariages consanguins, et cette proportion, que Boudin trouve excessive, est même inférieure à la moyenne ordinaire des infécondités qui, d'après Spencer Wells, est de 1 sur 8, et, d'après Simpson, de 1 sur 8, 5.

Auguste Voisin (3) de son côté, opérant dans la commune de Balz (Loire-Inférieure), a noté 2 cas de stérilité sur 46 ménages consanguins, et ne peut attribuer à cette cause les quelques fausses couches que sa statistique relève.

Moi-même, sur 18 observations d'unions consanguines qui figurent dans mes notes je trouve 2 stérilités absolues et trois femmes qui n'ont porté un produit à terme, qu'après un nombre plus ou moins grand de ce que j'appelle plus loin l'*avortement précoce.* Dans un de ces mariages entre cousins germains, le mari était monorchide, ce qui n'empêcha pas la naissance de trois enfants, deux filles et un garçon, tous les trois brillants d'intelligence et de santé.

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(1) Bourgeois, *Quelle est l'influence des mariages consanguins sur les générations?* (thèse de Paris, 1859).

(2) Seguin, *Comptes rendus de l'Académie des sciences*, 1863.

(3) Auguste Voisin, *Contribution à l'histoire des mariages entre consanguins*. Paris, 1866.

Je ne puis donc admettre que la consanguinité, toutes choses égales d'ailleurs, soit pour les unions sexuelles une cause de stérilité ou même d'un simple trouble dans la gestation.

Mais, a-t-on dit, si la consanguinité ne porte pas toujours atteinte au pouvoir procréateur du premier couple, cette cause, se répétant pendant plusieurs générations, aggrave chez chacune d'elles le principe d'affaiblissement qu'elle leur communique à chaque fois, et finit par éteindre complétement la faculté de reproduction.

A l'appui de cette thèse on avait cité l'extinction rapide des familles nobles, dont quelques-unes n'étaient parvenues à perpétuer leur nom qu'au moyen de substitutions ou qu'avec l'adjonction de bâtards.

Cette nocuité à longue échéance n'est pas plus admissible que celle du premier mariage consanguin : Benoiston de Châteauneuf, dans un remarquable mémoire sur ce sujet (1), constate que les familles nobles, loin d'être stériles, étaient au contraire très-fertiles, et que leur extinction est due surtout à la guerre qui moissonnait à la fois le père et les enfants, et à l'état ecclésiastique qu'embrassaient ceux de ces nobles qui ne suivaient pas la carrière des armes.

Jusqu'à présent j'ai raisonné dans l'hypothèse de familles parfaitement saines et exemptes de tout principe morbide.

Il n'en serait plus ainsi dans le cas où les époux seraient porteurs d'un vice héréditaire ou diathésique; alors, comme le dit M. André Sanson (2) *la consanguinité élève l'hérédité*

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(1) Benoiston de Châteauneuf, *Mémoire sur la durée des familles nobles en France* (*Annales d'hygiène publique*, t. XXXV, p. 27).

(2) André Sanson, *Traité de zootechnie*. Paris, 1862, et *Bulletin de la Société d'anthropologie*, t. III, p. 251.

à sa plus haute puissance, et cette diathèse, s'aggravant ou se métamorphosant à chaque génération, ainsi que l'a démontré M. Morel (de St-Yon) (1), peut affaiblir séparément ou simultanément, les zoospermes et les ovules, de manière à ce que l'imprégnation soit sans résultat ou que la gestation devienne impossible.

Dans ces circonstances la consanguinité aggrave l'hérédité morbide, c'est incontestable, et doit, à ce point de vue seulement, entrer en compte dans l'opinion du médecin.

En résumé, avec les données que possède aujourd'hui la science, rien n'autorise à penser que les mariages consanguins soient, plus que les mariages croisés, exposés à la stérilité ou à d'autres troubles de la génération; et que, dans les familles saines et indemnes de tout principe morbide, la consanguinité soit un danger pour le présent et pour l'avenir.

§ III. — Stérilité diathésique.

Si par stérilité diathésique on entend une infécondité due à la présence seule de la diathèse, c'est-à-dire sans trouble dans la sécrétion des testicules ou des ovaires; sans altération des produits de ces sécrétions; sans lésions ou déplacements des organes servant à la jonction du produit mâle et du produit femelle, je conteste formellement l'existence d'une semblable stérilité.

L'action morbide des diathèses sur la faculté génératrice est moins hypothétique : tantôt la diathèse tarit, faute de vitalité, les sécrétions testiculaire ou ovarienne, comme dans la tuberculisation; tantôt elle en étouffe les produits, en remplissant de matières morbides les canaux sécréteurs, comme dans la syphilis, le cancer, les tubercules, etc. Dans ces deux cas on constate ou l'absence des spermatozoïdes ou la cessation de la menstruation; tantôt la diathèse altère la vitalité du zoosperme ou de l'ovule, et tantôt, ce qui est plus commun, elle l'enlève à la muqueuse utérine, comme dans la scrofule, l'anémie, etc.; de telle sorte que, dans l'un et l'autre cas, l'ovule fécondé manque des conditions de la vie et meurt le plus souvent dans le premier mois de l'imprégnation; tantôt enfin la diathèse porte son action morbide sur un des organes de l'un ou de l'autre sexe et, par les altérations qu'elle y détermine, empêche la jonction du produit mâle et du produit femelle; toutes les diathèses sont dans ce cas.

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(1) Morel, *Des dégénérescences physiques, intellectuelles et morales de l'espèce humaine*. Paris, 1857.

L'histoire de chacune de ces stérilités est évidemment liée à l'histoire de la diathèse dont elle dépend, et je ne puis, on le conçoit, les passer en revue. D'ailleurs toutes ont une place dans un des divers chapitres de ce livre, suivant qu'il est question des lésions anatomiques ou des dégénérescences des testicules, des vésicules séminales, de la prostate et de l'urèthre d'une part, et d'un autre côté des lésions anatomiques et des dégénérescences des ovaires, des trompes et de l'utérus.

Je renvoie donc le lecteur à ceux de ces chapitres qui pourront l'intéresser.

Cependant, avant de clore ces quelques considérations, je tiens à formuler les lois que l'expérience m'a dictées à l'endroit de la stérilité diathésique.

1° Aucune diathèse par le fait seul de son existence n'entraîne la stérilité.

2° Pour qu'une diathèse amène la stérilité, il faut qu'elle envahisse une partie essentielle de l'appareil génital : testicules, canaux déférents, vésicules séminales, canaux éjaculateurs, prostate ou urèthre chez l'homme, et ovaires, trompes ou utérus chez la femme.

3° La stérilité est toujours le résultat des désordres amenés par la lésion diathésique, et non celui, je le répète, de la diathèse elle-même.

4° La cessation ou la persistance de la stérilité sont subordonnées à la disparution ou au maintien des lésions génito-diathésiques.

5° Ces lésions, au point de vue du pronostic de la stérilité, doivent être divisées en deux classes : 1° les diathèses et par conséquent les lésions qui en dépendent, qui sont au-dessus des ressources de l'art, telles que les lésions cancéreuses, tuberculeuses etc., qui rendent la stérilité absolue et incurable ; 2° les diathèses et par suite les lésions qui en découlent, qui subissent l'influence d'une médication appropriée et qui, par conséquent, n'entraînent qu'une stérilité temporaire et guérissable.

6° Parmi les lésions diathésiques, accessibles aux ressources de notre art, les unes disparaissent avec l'affaiblissement ou la guérison de la diathèse elle-même (scrofule, syphilis) ; tandis que les autres peuvent simplement être délogées de l'appareil génital, de telle sorte que la stérilité cesse, malgré la persistance de la diathèse dont les manifestations se sont transportées sur un autre point de l'organisme ; les choses se passent souvent ainsi dans les lésions des diathèses catarrhale, congestive, herpétique, arthritique, etc.

Cette dernière considération est, dans la pratique, d'une importance capitale, car la médication métastatique m'a presque toujours donné des résultats merveilleux, dans les cas de stérilité diathésique à manifestations voyageuses, comme dans certaines affections de l'utérus.

§ IV. — Stérilité supposée.

Il ne s'agit ici, comme dans la stérilité relative, ni d'un déplacement d'organe, ni d'un trouble de vitalité ; ni, comme dans la stérilité diathésique, d'une lésion anatomique ; mais au contraire il va être question d'une *prétendue* stérilité dans un état de santé en apparence parfait et au milieu des circonstances, générales et locales, les plus favorables en *apparence* à l'acte de la procréation.

Cet ensemble de conditions n'est point imaginaire, il se rencontre souvent au contraire dans la pratique : on voit, en effet, des ménages dans lesquels l'un des deux époux *ne peut avoir des enfants*, et pourtant, si c'est l'homme, il est impossible de constater un trouble quelconque dans la fonction séminale, dont le produit a tous les caractères du meilleur sperme ; si c'est la femme, les actes ovarien et utérin s'accomplissent dans les conditions les plus normales, à ce point que la conséquence de ces actes, la menstruation, est parfaitement régulière.

Plus je réfléchissais à ces faits étranges et plus je les trouvais en désaccord avec les lois suivantes, que je considère comme les axiomes de la physiologie de l'espèce :

1° Tout homme dont le sperme contient des animalcules doués de vie est apte à la procréation ;

2° Toute femme dont la menstruation est régulière est apte à la fécondation.

Le travail de M. Duplay, qui avait rencontré des spermatozoïdes dans la liqueur séminale des vieillards, ne contribua pas peu à augmenter mon embarras, surtout avant que je fusse parvenu à m'expliquer leur stérilité ; mais il finit, tant il occupa mon esprit, par me mettre sur la voie de ce que je crois être la vérité.

Quoi qu'il en soit, pour bien faire comprendre cette vérité, je vais dire par quelles phases diverses passa ma pensée pour arriver jusqu'à elle.

Ce fut dans le cadre de la syphilis que je me renfermai d'abord.

S'il est vrai, et l'observation journalière ne laisse aucun doute sur ce point (1), s'il est vrai, que le virus syphilitique tue l'enfant et en détermine l'expulsion à une époque plus ou moins avancée de son développement, on doit admettre que cette action fœticide s'exerce, pour ne parler que de la vie intra-utérine, depuis le moment de l'imprégnation du germe jusqu'à celui qui marque le terme naturel de la gestation. Quand l'accident arrive après la manifestation des symptômes de la grossesse, il ne reste aucun doute sur l'avortement; mais si, au contraire, l'accident se produit dans les premiers jours de la fécondation, et surtout si l'intervalle qui sépare l'imprégnation du germe et son expulsion n'a que la durée d'un mois, l'avortement passe inaperçu, et la femme ne se doute ni qu'elle a été fécondée, ni qu'elle a fait une fausse couche.

Ce fait d'avortement aussitôt après l'imprégnation du germe peut se reproduire à l'infini, et alors l'individu qui est porteur du virus syphilitique est bel et bien accusé et convaincu de stérilité.

Et pourtant, est-ce bien là l'expression qui doive caractériser son état? Le résultat final de la copulation a été atteint : un germe a été fécondé; il n'y a pas de stérilité. Si l'embryon arrive jusqu'au sixième mois de son développement, on n'accusera de stérilité ni le père, ni la mère; mais si le même embryon n'atteint que le sixième jour de son imprégnation, on n'est pas plus fondé que précédemment à déclarer un des deux parents stérile. Dans l'un et l'autre cas, il n'y a qu'un avortement, et toute leur différence se résume en une question de temps.

On le prévoit déjà, je commençais à rentrer dans les limites des deux grandes lois physiologiques que j'ai énoncées tout à l'heure.

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(1) Diday, *Traité de la syphilis des nouveau-nés et des enfants à la mamelle*, 1854, in-8, p. 218.

Cette hypothèse d'avortement précoce dans les cas de prétendue stérilité syphylitique, je l'appliquai non-seulement à tous les états diathésiques accusés de produire l'infécondité, en dehors d'une lésion anatomique, mais encore à ces idiosyncrasies, sans germe patent d'affection, qui, jusqu'à présent, n'avaient servi qu'à masquer notre ignorance.

Il s'agissait de vérifier la réalité de cette hypothèse.

Dans quelques cas, il est impossible d'avoir la preuve matérielle de l'avortement en retrouvant l'ovule entier; deux fois au début de ma carrière, j'ai eu ce bonheur : la première fois chez une prostituée de la rue Geoffroy-Marie; l'ovule, expulsé sans force de l'utérus, s'était arrêté dans le vagin, où pendant quelque temps je le pris pour un caillot de sang; la seconde fois chez la femme d'un cordonnier de la rue Lamartine; l'ovule, sorti du vagin, fut retrouvé entier au milieu de caillots sanguins qui remplissaient un vase. Chez ces deux femmes, l'avortement s'était produit dans le premier mois de la grossesse, à l'époque correspondante à leur menstruation, si bien que ni l'une ni l'autre ne se croyaient enceintes.

Depuis cette époque, c'est-à-dire depuis 25 ans, des occasions semblables ne m'ont pas manqué, et tous les praticiens dont l'attention avait été éveillée par mes explications ont pu, sans grande peine, recueillir des produits d'avortement précoce.

Les prostituées, que leur métier expose plus spécialement aux fausses couches, sont fort au courant de ce phénomène, comme nous l'apprend le passage suivant de Parent Duchâtelet : « J'ai parlé plus haut, dit-il, de l'irrégularité de la menstruation chez quelques prostituées et des interruptions que présentait, chez elles, cette évacuation dans une foule de circonstances ; ne pourrait-on pas les attribuer à une conception et à une véritable grossesse ? Cette opinion, qui a été émise devant moi par plusieurs médecins et physiologistes distingués, acquiert une très-grande probabilité par les observations faites par M. Serres, lorsque les prostituées étaient soignées dans une des divisions de la Pitié. Je transcris ici les réponses que cet académicien fit à mes questions : « Les pertes abondantes sont rares chez ces femmes ; mais les plus jeunes ont souvent des retards dans leurs règles qui se terminent par l'expulsion de ce qu'elles appellent un *bondon*. Pendant deux années, je ne fis pas attention à cette expression ; mais ayant dirigé mes recherches sur l'embryologie, j'examinai avec soin ces productions, et il me fut facile d'y reconnaître tous les caractères de l'œuf humain ; j'ai pu, dans un court espace de temps, en recueillir un grand nombre qui tous étaient sortis à une époque qui indiquait une conception de quatre à cinq semaines (1). »

On le voit, l'opinion que j'émettais il y a 20 ans n'était pas nouvelle dans la science ; seulement, semblable à beaucoup d'autres, elle n'avait pas suffisamment attiré l'attention du praticien.

Mais comme dans tous les cas d'avortement précoce il n'est pas possible de retrouver l'ovule, parce qu'il se rompt avec la plus grande facilité et que ses débris se perdent entraînés par le sang qui s'échappe de la vulve, il me fallait d'autres témoignages et plus constants et aussi certains.

Je les trouvai dans la symptomatologie même de la grossesse et dans celle de l'avortement, et, en conséquence, je formai deux groupes de symptômes :

1° Symptômes relatifs à la grossesse ;

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(1) Parent-Duchâtelet, *De la prostitution dans la ville de Paris*, 3e édit., Paris, t. I, p. 222 et 223.

2° Symptômes relatifs à l'avortement.

Les femmes, interrogées avec soin, se rappellent qu'elles éprouvent quelquefois et sans cause connue des malaises, des hauts de cœur, surtout le matin en se levant; presque toutes l'attribuent à une mauvaise disposition et prennent contre ces accidents essentiellement passagers, celles-ci de la limonade, celles-là un purgatif, et beaucoup d'entre elles n'y prêtent aucune attention; quelquefois les règles sont en retard, et alors tous ces phénomènes morbides trouvent une facile explication; dans d'autres cas, au contraire, les menstrues devancent l'époque de leur apparition, et ce dérangement est encore accepté comme la cause évidente de tous les accidents.

Rarement, dans ces circonstances, la femme consulte son médecin, d'autant mieux qu'après l'*apparition des règles* tout rentre dans l'ordre normal.

Interrogez maintenant la femme sur l'état des menstrues qui suivent immédiatement ces malaises; presque toujours elles sont ou avancées ou retardées, et, chose à peu près constante, l'hémorrhagie est alors plus abondante qu'à l'ordinaire.

Cependant, cette hémorrhagie peut arriver à l'époque menstruelle habituelle; dans ce cas, l'avortement précoce est provoqué par le travail congestif qui se fait dans tout l'appareil génital à l'époque cataméniale, de telle sorte que dans l'esprit de la femme, les accidents généraux et l'écoulement sanguin de la vulve se lient et s'expliquent les uns par les autres, à ce point qu'il lui est impossible d'avoir l'idée de grossesse ou celle d'avortement. Pour elle, comme pour les personnes non prévenues, tout se réduit à un dérangement passager de la menstruation, auquel il est toujours facile de trouver une explication au milieu des circonstances diverses, morales ou physiques, qui agissent sur la sensibilité de la femme.

Ces observations me donnent même le droit d'aller plus loin. Je suis convaincu que toute copulation entre individus possédant les caractères de fécondité que j'ai indiqués plus haut est fatalement, nécessairement suivie d'une fécondation, et que beaucoup de femmes qui portent un enfant à terme, après un certain temps de stérilité, ont éprouvé un nombre plus ou moins considérable d'avortements précoces. Il est des femmes qui avortent régulièrement au sixième ou au septième mois de leur grossesse, et qui ne parviennent à terme qu'après un nombre plus ou moins grand de fausses couches ; pourquoi ne pas admettre qu'il y en ait d'autres qui avortent constamment dans le premier mois de la fécondation, alors que les causes d'avortement sont tout à la fois plus nombreuses et plus actives ? Toute la différence entre le fait du développement de l'embryon et celui de l'avortement précoce tient à ce que, dans le premier cas, l'œuf fécondé a pu se fixer à la face interne de l'utérus, et que, dans le second, il n'a pu le faire, soit parce que l'œuf n'avait pas par lui-même une suffisante vitalité, soit parce que l'utérus était dans un état pathologique à ne pas permettre cette union.

C'est ainsi que s'explique la fécondité de certaines femmes après un temps plus ou moins long de stérilité : chez celle-ci, l'œuf ne pouvait se fixer à cause d'un état spasmodique de la matrice sous l'influence des excitations amoureuses ; l'habitude, le mariage, cet éteignoir de l'amour, comme on dit, ont amené le calme dans l'organe, et la femme devient enceinte ; chez celle-là, l'œuf ne se pouvait fixer à cause d'un état atonique de l'utérus ; la femme va aux eaux ferrugineuses, aux bains de mer et en revient fertile ; chez une troisième, l'œuf ne se pouvait fixer à cause d'un état phlegmasique de la matrice ; la femme est prise d'une affection aiguë, d'une hémorrhagie, est soumise à un régime débilitant, et ces circonstances, en déplaçant ou déprimant l'inflammation de l'organe gestateur, mettent un terme à sa stérilité.

Comment, avec les explications ordinaires, comprendre ces faits dont nous sommes tous les jours les témoins? De quelle manière concevoir que les fonctions spermatique et ovarienne qui s'accomplissent normalement aboutissent tantôt à un résultat négatif et tantôt à un résultat positif? Non, mille fois non, les résultats sont toujours positifs; seulement, les circonstances ultérieures, nécessaires au développement de ce résultat ne sont plus dans les conditions normales, et l'œuf fécondé, ne rencontrant pas les ressources indispensables à son accroissement, meurt et est expulsé à une époque toujours rapprochée de sa formation.

Je le répète donc, dans les cas qui nous occupent, c'est-à-dire dans ceux où les actes séminal et ovarien sont réguliers, où aucune altération de position ou de tissu n'existe sur les organes génitaux de l'homme ou de la femme, si la génération ne se produit pas, il n'y a pas réellement stérilité, il y a avortement précoce.

La distinction que j'établis ici est de la plus haute importance en pratique. D'abord, quand le médecin sera bien convaincu qu'il a à prévenir un avortement, et non une prédisposition naturelle à la stérilité, il ne renverra pas sa malade comme incurable, et conservera un espoir qui bien souvent se réalise; ensuite, au lieu de demander à l'ovaire l'explication d'une infécondité où il n'a que faire, et de s'égarer dans un labyrinthe d'hypothèses sans issue pour se rendre compte d'une stérilité qui, en définitive, n'existe pas, l'homme de l'art n'aura plus qu'à rechercher les causes d'un avortement précoce, et, une fois mis sur la trace de cette cause, de recourir à une thérapeutique à laquelle probablement il n'eût jamais songé sans cette indication.

Comme on le voit, la question de la stérilité supposée est bien plutôt du domaine d'un traité d'accouchement qu'elle ne rentre dans les limites de ce livre, car notre rôle finit là où l'embryon est fécondé; cependant j'ai dû l'aborder, mais j'ai dû aussi la ramener dans les bornes que l'observation m'a permis de lui assigner, à ce point que ce problème, déchu de son importance, se réduit, la plupart du temps, à un simple chapitre de pathologie utérine.

Je renvoie donc le lecteur, pour les détails pratiques, à la partie de cet ouvrage où j'examine les maladies des organes essentiels de la génération et celles de leurs produits.

SECTION PREMIÈRE

STÉRILITÉ CHEZ L'HOMME

Chez l'homme la puissance procréatrice s'exerce au moyen d'un liquide spécial que les testicules sécrétent, que les vésicules séminales reçoivent et qui s'échappe par le canal de l'urèthre, pour aller dans les organes de la femme, à la rencontre du produit générateur de celle-ci.

Elle exige donc l'exercice de trois fonctions dont chacune d'elles me sera comme une étape dans la longue route que j'ai à parcourir : dans la première, le sperme se forme, c'est la *fonction de sécrétion ;* dans la seconde, le sperme formé est mis en réserve, c'est la *fonction de conservation ;* dans la troisième, enfin, le sperme est projeté au dehors, c'est la *fonction d'émission.*

Dans chacune de ces trois étapes et dans le parcours de l'une à l'autre, le sperme est exposé à des altérations diverses qui portent tantôt sur sa constitution intime, et par conséquent sur ses propriétés fécondantes, et tantôt sur les conditions de sa marche depuis l'organe de sécrétion jusqu'à l'organe d'émission.

La pathologie offre donc au sujet qui m'occupe une division rationnelle, et je l'aurais sans doute adoptée si la division physiologique que je viens d'indiquer et que je me propose de suivre ne la contenait pas implicitement et n'était tout à la fois plus complète et plus simple qu'elle.

Mais pour comprendre les développements dans lesquels je vais entrer, il est nécessaire que le lecteur se reporte aux considérations générales qui sont en tête de cet ouvrage et dans lesquelles il trouvera la description des organes spermatiques et le mécanisme de la fonction qu'ils remplissent (1). Ces notions anatomiques et physiologiques devaient être rappelées dans une introduction, mais ne pouvaient trouver place au milieu d'un livre consacré à la pathologie, où elles eussent, sans grand profit, ralenti la rapidité du discours.

CHAPITRE PREMIER

TROUBLES DE LA FONCTION DE SÉCRÉTION SPERMATIQUE.

Les causes qui peuvent jeter le trouble dans la sécrétion spermatique, en amenant pour résultat final soit l'absence complète de cette sécrétion, soit une altération dans la nature intime du sperme, tiennent tantôt à un état général, soit physiologique, soit morbide, et tantôt à un état pathologique de l'appareil sécréteur lui-même.

Je vais les examiner sous ces deux chefs principaux.

§ I. — Troubles dépendant d'un état général.

1° *Age. — Vieillesse.*

Les deux extrémités de la vie sont peu propres à la fécondité; la nature ne nous a dévolu la mission de perpétuer l'espèce qu'après le complet développement des organes et avant leur dépérissement, afin que nous puissions transmettre à nos descendants une plus grande somme de force et de vitalité.

L'établissement de la fonction génitale est, chez l'homme, le signal d'une transformation morale et physique dont je n'ai point ici à retracer les caractères, mais qui indique d'une manière certaine que l'individu a désormais acquis l'aptitude à la procréation.

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(1) Voyez les pages 19 et suiv.

En est-il de même lorsque cette aptitude disparaît? En d'autres termes, la nature a-t-elle assigné une limite à peu près constante à l'exercice de la fonction procréatrice et a-t-elle fourni des signes auxquels on puisse reconnaître l'anéantissement de cette fonction?

Les opinions les plus accréditées des physiologistes modernes relativement à la faculté fécondante des vieillards semblent en contradiction avec des faits authentiques et qui d'ailleurs se renouvellent tous les jours, et surtout avec les recherches de M. Duplay, sur lesquelles j'insisterai tout à l'heure.

Il est incontestable que dans l'ordre régulier des choses et dans la très-grande majorité des cas l'homme arrivé à un certain âge perd la faculté de se reproduire; en conséquence, comme dans les idées les plus généralement admises aujourd'hui on place toute la puissance fécondante dans les zoospermes, on en a conclu que les animalcules manquaient chez les vieillards. « Le développement des spermatozoaires, dit J. Müller, commence durant la jeunesse dans la classe des mammifères; il n'a lieu qu'à l'époque de la puberté dans l'espèce humaine, et cesse dans l'âge avancé (1). » Longet n'est pas moins explicite que Müller : « Kartzœker, dit-il, Geoffroy, Andry ont remarqué les premiers qu'il n'y a pas de spermatozoaires chez l'enfant; Baker n'en a pas rencontré davantage chez les hommes épuisés par les excès vénériens. Enfin ils disparaissent complétement chez l'homme par le progrès de l'âge, c'est-à-dire en même temps que la puissance virile (2). »

Cependant Wagner émet une opinion toute contraire :

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(1) J. Müller, *Manuel de physiologie*, traduit de l'allemand, 2ᵉ édit. Paris, 1851, t. II, p. 626.

(2) Longet, *Traité de physiologie*, t. II, p. 54.

« L'appétit vénérien, dit-il, diminue chez l'homme, mais la faculté d'engendrer semble subsister pendant toute la vie chez ceux qui jouissent d'une bonne santé... J'ai trouvé chez les hommes très-âgés des spermatozoaires dans les testicules; chez les hommes de soixante à soixante-dix ans j'ai toujours trouvé des spermatozoaires dans les testicules; fréquemment il n'y en avait plus dans le canal déférent, mais en général les vésicules séminales en contenaient (1). »

Comme on le voit, il était assez difficile de se former une opinion au milieu de ces contradictions d'autorités également respectables, quand les recherches de M. Duplay, entourées de toutes les garanties de savoir, de talent et de probité que l'on doit exiger d'un expérimentateur, ont aplani bien des doutes sur cette face de la question.

Pour les lecteurs superficiels, la lumière apportée par M. Duplay, loin d'avoir éclairé le difficile problème de la fécondation, l'a replongé dans de nouvelles ténèbres; car, dira-t-on, si la sécrétion spermatique s'effectue chez le vieillard aussi normalement que chez l'adulte, et si le premier n'a plus comme le second l'aptitude de procréer, cette aptitude évidemment ne réside pas dans la composition du sperme, ou, pour simplifier, dans la présence des spermatozoaires, et il en faut revenir à l'opinion de Burdach, qui dit : « Ce n'est point aux spermatozoaires qu'est due la faculté procréatrice; ils ne sont qu'un effet accessoire et un phénomène concomitant de cette faculté, motif pour lequel ils manquent chez les enfants, les vieillards et les malades (2). »

Je dirai tout à l'heure comment l'opinion de Wagner et les résultats des observations de M. Duplay sont parfaitement compatibles avec la stérilité des vieillards, quoique admettant la continuation de la sécrétion normale du sperme. Pour le moment, je dois m'arrêter un instant aux expériences de M. Duplay, car elles établissent un point fondamental dans la question qui nous occupe, et dont l'importance est immense, non-seulement en physiologie et en pathologie, mais encore aux points de vue de la morale, de la famille et de la médecine légale. On me pardonnera donc, eu égard à cette importance multiple, les emprunts nombreux que je pourrai faire au travail de notre confrère.

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(1) Wagner, *Histoire de la génération*, traduction française, p. 14 et 31.

(2) Burdach, *Traité de physiologie*, trad. par A.-J.-L. Jourdan. Paris, 1837.

M. Duplay a examiné chez 51 vieillards le liquide contenu dans les vésicules séminales et les canaux déférents, et trente-sept fois il a constaté dans ce liquide la présence des spermatozoaires. Ces animalcules ne se sont pas toujours présentés dans le même état. « Dans la majorité des cas (27 fois), dit M. Duplay, ils étaient parfaitement bien conformés, la tête était volumineuse, la queue longue et recourbée, enfin ils ne différaient en rien de ceux que l'on observe dans le sperme de l'adulte; quelquefois (2 fois) la tête était conformée comme chez l'adulte, mais la queue était moins longue et ne se terminait plus par un filament aussi long et aussi recourbé; une fois les spermatozoaires, quoique se terminant par un prolongement très-long et très-recourbé, présentaient une tête moins volumineuse que dans les cas ordinaires; une autre fois on voyait, dans le champ du microscope, un grand nombre de têtes de spermatozoaires, dont quelques-unes étaient suivies d'une sorte de tronçon de queue brusquement coupée; cinq fois aussi j'ai observé un mélange de ces deux états de spermatozoaires. Ainsi, à côté de zoospermes bien conformés et présentant les mêmes caractères que chez l'adulte, on en rencontrait plusieurs à queue tronquée, et l'on voyait, à côté d'eux, de petits corps qu'il était facile de reconnaître pour des têtes de spermatozoaires. Dans un cas, j'ai constaté, avec la présence des animalcules spermatiques, celle d'une assez grande quantité de petits cristaux dont je n'ai pu déterminer la nature. Ajoutons que, quelquefois aussi, à côté des spermatozoaires bien développés, on apercevait un grand nombre de granules, soit isolés, soit contenus en certain nombre dans une vésicule commune, et entièrement analogue à celles d'où l'on voit les spermatozoïdes s'isoler, ainsi que l'ont signalé les physiologistes qui ont étudié les diverses phases de leur développement. M. Davaine, avec qui j'ai observé plusieurs fois cette particularité, était aussi fortement porté à croire que ces agglomérations de granules étaient des spermatozoaires en voie de développement.

« Quant à la quantité des spermatozoïdes, elle n'a pas été toujours la même : dans quelques cas, ils étaient aussi abondants que chez l'adulte ; ainsi, le champ du microscope en était couvert, on les voyait, très-rapprochés les uns des autres, s'entre-croiser dans tous les sens. Chaque gouttelette de sperme soumise à l'examen en présentait la même quantité. J'ai constaté sept fois cette abondance excessive des animalcules spermatiques, et le sperme d'un de ces sujets a été soumis à l'examen de MM. les membres de la Société de biologie. D'autres fois, quoique encore abondants, les spermatozoaires l'étaient moins que dans le cas précédent; ils étaient moins pressés les uns contre les autres, quoique le champ du microscope en présentât encore un grand nombre. J'ai observé seize fois ce second état. Enfin quelquefois les animalcules étaient rares ; on n'en apercevait plus que quelques-uns, isolés au milieu d'un liquide qui présentait de petites granulations et des débris de cellules épithéliales. Quatorze fois j'ai constaté cette rareté des spermatozoaires, qui souvent, quoique peu nombreux, étaient parfaitement développés.

« Les spermatozoaires se rencontraient soit dans toute l'étendue des voies spermatiques, ce que j'ai rencontré vingt-six fois, soit dans un seul point de l'appareil excréteur. Ainsi trois fois le sperme seul contenu dans les canaux déférents renfermait des zoospermes, et celui des vésicules n'en laissait apercevoir aucun ; une fois leur présence a été constatée dans le liquide des vésicules séminales et n'a pu l'être dans les canaux déférents ; enfin il m'est arrivé sept fois d'en trouver dans une seule vésicule, quatre fois dans la vésicule droite et trois fois dans la vésicule gauche, à l'exclusion de celle du côté opposé et des deux canaux déférents (1). »

L'absence des spermatozoaires chez les quatorze individus restant de la statistique de M. Duplay ne se peut expliquer par rien d'anormal. « Quant aux testicules, dit l'auteur que nous citons, leur tissu propre était sain sur les quatorze cas ; on observait toujours cet état de flaccidité de l'organe, qui est presque constant chez le vieillard, et que nous avons déjà signalé. Dans un seul cas, les testicules étaient excessivement petits et avaient subi une véritable atrophie. Cinq fois j'ai rencontré l'hydrocèle de la tunique vaginale, et, dans un seul cas, un kyste de l'épididyme (2). »

Enfin, comme il est impossible de reproduire ici tout le travail de M. Duplay, je terminerai par les remarquables conclusions qu'il tire des faits étudiés par lui :

« 1° La sécrétion du sperme continue à s'effectuer chez les vieillards. Quoique, parmi ceux qui ont été soumis à notre observation, le plus âgé eût quatre-vingt-six ans, et que nous n'ayons pas eu l'occasion d'étendre nos recherches au delà de cet âge, tout porte à croire que la sécrétion spermatique se prolonge jusque dans un âge beaucoup plus avancé.

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(1) Duplay, *Archives générales de médecine*, 4e série, t. XXX, décembre 1852, p. 393.

(2) Duplay, *Ibid.*, p. 403.

» 2° Cette sécrétion est généralement moins abondante que chez l'adulte; ce qui le prouve, c'est la prédominance du liquide sécrété par la membrane muqueuse des vésicules séminales dans le sperme que renferment ces réservoirs. Cependant, par une exception rare, à la vérité, et même chez des octogénaires, la sécrétion du sperme paraît être aussi abondante que chez l'adulte, car le liquide que renferment les vésicules séminales de ces sujets privilégiés paraît aussi consistant que chez les sujets encore dans la force de l'âge.

» 3° Contrairement à l'opinion généralement admise par les physiologistes, les spermatozoïdes se retrouvent dans le sperme des vieillards. Les cas contraires, loin d'être la règle, doivent être considérés, d'après nos recherches, comme l'exception. Si dans certains cas les spermatozoaires sont moins nombreux que chez l'adulte, ou répandus moins uniformément que chez ce dernier dans toute l'étendue des voies spermatiques; si dans certains cas ils présentent une conformation moins parfaite, dans d'autres aussi, et quelquefois chez des sujets très-âgés, on les retrouve avec tous les caractères qu'ils présentent pendant la période moyenne de la vie.

» 4° Si les vieillards ne sont plus aptes à se reproduire, ce que l'on observe le plus généralement, et si, d'un autre côté, la présence des spermatozoaires constitue la qualité fécondante de la liqueur séminale, c'est moins à la composition de leur sperme qu'aux autres conditions de l'acte reproducteur qu'il faut attribuer l'infécondité des vieillards (1). »

A côté de ce remarquable travail, dont j'ai été heureux de reproduire textuellement les principaux passages, et qui, le premier, oppose des faits authentiques à une pure hypothèse des physiologistes, je crois inutile de mentionner quelques observations qui me sont propres, et qui, d'ailleurs, concordent exactement avec les résultats annoncés par M. Duplay. Aussi, bien convaincu de l'existence des spermatozoaires dans la liqueur séminale des vieillards et, d'un autre côté, forcé d'admettre l'inaptitude de ceux-ci à se reproduire, j'ai cherché quelle pouvait être la condition de l'acte reproducteur qui faisait défaut au vieillard; après une observation attentive du jeu et de l'importance de ces conditions, je crois avoir acquis la certitude que l'infécondité de l'âge avancé tient ou à une altération de vitalité des spermatozoïdes, ou à une diminution notable de la force d'émission de la liqueur séminale.

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(1) Duplay, *Archives générales de médecine*, décembre 1852, p. 403

Les altérations des zoospermes doivent m'occuper longuement plus loin; le chapitre que je consacre à ce sujet si peu connu encore ferait double emploi avec ce que j'en pourrais dire ici.

En conséquence, je ne m'arrêterai en cette place qu'à la seconde condition de la stérilité du vieillard, c'est-à-dire la faiblesse d'impulsion imprimée à la liqueur spermatique.

Cette cause de stérilité est quelquefois manifeste chez l'adulte; elle se trahit d'ordinaire par une érection molle et flasque. Les masturbateurs, par exemple, offrent souvent auprès des femmes cette faiblesse d'érection, qu'il la faille attribuer à leur répugnance pour le sexe ou à l'affaiblissement de leurs organes; presque toujours alors ils sont inhabiles à se reproduire, bien que leur sperme contienne des animalcules. Cette inaptitude à la fécondation se perpétue tant que dure la faiblesse des érections, et la fécondité reparaît avec le retour de la force érectile.

Pourquoi n'en serait-il pas de même pour le vieillard? Il est incontestable que les fibres contractiles, quelles qu'elles soient, qui concourent à l'expulsion du sperme participent chez lui à l'affaiblissement qui frappe toutes les parties de l'organisme, et qu'elles ne restent pas seules, énergiques et vivaces, au milieu du dépérissement de toute l'économie.

Mais de même que chez certains individus la vitalité générale conserve plus longtemps ses heureux attributs, de même il est des vieillards dont les vésicules séminales et les plans musculaires qui les recouvrent gardent une force de contraction qui n'est pas ordinaire à cet âge. Il en devait être ainsi chez tous ceux dont l'histoire a noté le souvenir de la paternité tardive : Caton le Censeur, Massinissa, roi de Numidie, Ladislas, roi de Pologne, etc., qui engendrèrent des enfants à l'âge de quatre-vingts ans et quatre-vingt-dix ans. Sans doute il est impossible de s'appuyer sur de pareils exemples pour défendre l'opinion que j'émets ici, car l'histoire, on le comprend, est muette sur ce point de physiologie ; mais quand on a attentivement observé ce qui se passe dans les cas d'impuissance, il est impossible de ne pas admettre que la force d'émission du sperme joue un grand rôle dans l'acte générateur.

Je sais bien que Spallanzani et deux de ses élèves ont fécondé des chiennes en portant sur leur utérus la liqueur séminale du mâle ; je ne rappelle ces expériences que pour aller au devant d'une objection, car, pour réussir dans la fécondation artificielle, l'illustre abbé se servait d'une seringue et imprimait par conséquent au liquide une certaine force d'impulsion.

En résumé, il n'y a que deux explications pour se rendre compte de la stérilité des vieillards pourvus d'animalcules spermatiques :

1° Altérations de ces animalcules, leur enlevant la vitalité nécessaire à la fécondation ;

2° Faiblesse d'émission de la liqueur séminale.

J'ai renvoyé l'étude de la première cause au chapitre consacré aux altérations des spermatozoïdes.

J'ai cru devoir dire quelques mots seulement de la seconde, que j'aurais pu réserver pour le chapitre où j'examine le rôle de l'impuissance dans la stérilité, parce que le vieillard qui coïte, quoique ne fécondant pas, ne peut véritablement être rangé parmi les impuissants.

D'ailleurs toutes ces questions se représenteront dans l'un et l'autre chapitre; je dois donc y renvoyer le lecteur, car ici je n'ai fait que poser des bases.

2° *Tempérament. — Constitution. — État de maladie.*

Tempérament. — Dans la sévère acception du mot, il n'est aucun tempérament qui soit à lui seul cause de stérilité; mais le tempérament peut être une prédisposition à certains troubles, à certaines exagérations fonctionnelles, qui, eux, sont des causes prochaines d'infécondité. Ainsi il est incontestable qu'un coït accompli avec une grande exaltation de voluptés donne assez ordinairement, au point de vue de la génération, des résultats négatifs. Or, tous les tempéraments n'étant pas susceptibles d'atteindre ce haut degré de surexcitation, celui qui y prédispose peut donc être regardé comme une cause indirecte et éloignée d'infécondité.

Cependant le tempérament n'est pas toujours et fatalement la source de voluptés étranges; d'autres conditions sont nécessaires pour amener des plaisirs épileptiques, et, parmi elles, il faut mettre au premier rang la tension de l'amour moral, le refoulement plus ou moins prolongé des désirs vénériens, la continence plus ou moins longue, etc.

D'ailleurs cet état de surexcitation épileptiforme, qui quelquefois est bien réellement un motif d'infécondité, est essentiellement relatif et passager : le changement l'altère, l'habitude l'émousse et la satiété le détruit.

Dans les conditions normales d'excitation vénérienne, conditions essentiellement variables avec chaque individu, il n'existe, je le répète, aucun tempérament infécond; et s'il en est qui prédisposent à la stérilité par un excès en plus ou en moins d'excitation vénérienne, cette prédisposition se corrige, d'un côté par l'habitude, et de l'autre par un peu plus d'amour.

Constitution. — Il en est de même des constitutions, en tant qu'elles n'ont pas franchi les barrières de la santé ; je n'en sais aucune qui soit fatalement cause de stérilité, car on rencontre tous les jours des hommes faibles et délicats procréer des enfants robustes et vigoureux.

Il est incontestable que chez les individus dont les sources de la vie sont languissantes, la sécrétion spermatique doit être moins énergique que chez ceux dont la vitalité est exubérante ; mais il importe peu, pour le succès de la fécondation, que cette sécrétion soit plus ou moins abondante, pourvu qu'elle s'accomplisse au milieu des conditions normales, c'est-à-dire pourvu que le sperme présente les propriétés physiques et chimiques qui le constituent liqueur fécondante. Sous ce rapport, je le répète, il n'est aucune constitution qui s'oppose à la sécrétion normale du liquide prolifique ; nous allons même voir que cette sécrétion n'est ni altérée, ni suspendue par des circonstances pathologiques qui transforment en véritable état morbide une constitution malheureuse.

État de maladie. — Il ne peut être ici question que des maladies chroniques ; à notre point de vue, il n'est en aucune façon intéressant de savoir si les spermatozoaires vivent pendant une fièvre typhoïde ou dans le cours d'une pneumonie, car les conditions au milieu desquelles se trouve l'organisme lui interdisent l'exercice d'une fonction dont l'accomplissement, alors même qu'il serait possible, compromettrait gravement la santé générale.

Il ne peut donc s'agir ici que de maladies chroniques dont la durée et la légèreté, ou l'intermittence des accidents, autorisent l'œuvre de la propagation de l'espèce.

L'influence que les maladies chroniques peuvent exercer sur le pouvoir fécondant de l'homme, en ne considérant que les spermatozoïdes, se rapporte : 1° à la sécrétion testiculaire; 2° au produit de cette sécrétion.

Je n'ai à m'occuper ici que de la première question, c'est-à-dire de savoir si les maladies chroniques qui n'ont pas les organes génitaux pour siéges de leurs manifestations respectent ou suspendent la sécrétion des zoospermes.

Quant à l'influence des maladies chroniques sur la vitalité des spermatozoïdes, elle doit m'occuper ailleurs. Dans un article spécial que l'on trouvera plus loin, je montre que les spermatozoïdes sont susceptibles d'altérations les rendant incapables ou de féconder le germe ou de le féconder d'une manière viable.

Mais en cette place, je le répète, je n'ai à m'occuper que de la sécrétion testiculaire, c'est-à-dire de la présence des zoospermes dans la liqueur séminale pendant l'existence des maladies chroniques.

Que ces états morbides se trouvent sous la dépendance d'une diathèse, ou soient plus simplement la transformation d'un état morbide aigu, ils ne semblent pas avoir une influence très-marquée sur la sécrétion spermatique.

Dans les cas d'affections diathésiques, alors que le germe morbide ne s'est point encore traduit au dehors, le sperme ne subit aucune altération, puisque nous voyons ces vices pathologiques se transmettre d'une génération à l'autre; lorsque la diathèse a fait explosion, lorsque, sortant de l'état latent, elle a attaqué les sources de la vie, comme chez les phthisiques et les cancéreux, par exemple, la sécrétion spermatique ne paraît pas davantage altérée; on rencontre tous les jours des tuberculeux au deuxième et même au troisième degré qui deviennent pères; et combien n'y a-t-il pas d'hommes qui ont des enfants avec des cancers en pleine suppuration ? Ces faits sont si constants et si avérés que quelques philanthropes dans l'espérance d'une régénération complète de l'espèce humaine ont entrevu la possibilité d'interdire le mariage aux individus atteints de certaines diathèses.

Le fait de l'existence des spermatozoaires pendant les maladies chroniques, constaté par l'observation clinique, a été confirmé par l'examen microscopique. C'est encore aux recherches de M. Duplay qu'il faut avoir recours.

Parmi les trente-sept vieillards chez lesquels cet expérimentateur a rencontré des animalcules spermatiques, vingt et un avaient succombé à des maladies aiguës et seize à des maladies chroniques, *dont plusieurs*, dit l'auteur, *avaient déterminé cet état de cachexie et de marasme dans lequel, suivant l'opinion de certains auteurs, les spermatozoaires disparaissent même chez l'adulte.*

Au nombre de ces maladies chroniques nous voyons :

Entérite chronique......................	4
Affection organique du cœur..............	1
Tubercules pulmonaires..................	3
Bronchite chronique.....................	2
Méningite chronique.....................	2
Ramollissement du cerveau...............	2
Cancer de l'estomac.....................	1
Squirrhe du pancréas....................	1

Cependant, sur les quatorze vieillards dans le sperme desquels des animalcules n'ont pas été rencontrés, quatre seulement avaient succombé à des maladies aiguës ; les dix autres se répartissaient, par rapport à la cause de leur mort, de la manière suivante :

Scorbut et méningite chronique...........	1
Tubercules pulmonaires..................	2
Ramollissement chronique du cerveau......	1
Suppuration énorme, marasme............	1
Méningite chronique.....................	1
Catarrhe chronique......................	1
Myélite chronique.......................	1
Cancer du côlon.........................	1
Paralysie, eschare, marasme..............	1

En présence de ces résultats contradictoires, il serait déraisonnable d'admettre que l'absence des spermatozoaires, dans les dix derniers cas, est due à la maladie chronique qui a entraîné la mort, puisqu'on voit, dans d'autres cas, les mêmes états morbides ne pas déterminer la disparition des animalcules spermatiques.

Et pourtant des auteurs, Davy entre autres, n'ont pas craint d'établir en loi que *les maladies chroniques qui se terminent par la mort arrêtent la sécrétion des animalcules spermatiques* (1). Mais il en est de cette loi comme de beaucoup d'autres trop facilement admises dans le sujet si peu connu de la stérilité : elle n'est sanctionnée ni par l'observation clinique ni par l'étude nécropsique.

§ II. — Troubles dépendant d'un état local.

1° *Anomalies des testicules.*

Ces anomalies portent : 1° sur la position ; 2° sur le volume des testicules.

Je ne m'arrêterai ici qu'à la première de ces deux catégories, parce que la seconde, dans laquelle l'atrophie seule de la glande nous intéresse, rentre dans l'histoire de cet état morbide que peuvent également amener des circonstances accidentelles, et que j'examinerai tout à l'heure.

Anorchidie. — Jusqu'à Hunter, les anatomistes n'ont fait aucune difficulté d'admettre, non-seulement comme possible, mais encore comme assez commune, l'absence des deux testicules; bien plus, cette absence ayant été constatée chez des individus qui avaient fait preuve tout à la fois de désirs vénériens, de virilité et de fécondité, on en avait naturellement conclu que les testicules n'étaient pas nécessaires à la fonction génitale; aussi Cabrol n'éprouvait aucune répugnance, dans des cas pareils, à conseiller le mariage. « Vous entendrez, dit-il, qu'estant moy à Beaucaire, je feus appellé pour avoir advis de moy, par les parens d'un jeune homme de ladicte ville, aagé de xxii ans ou environ, pour scavoir si on le marierait ou si on le ferait d'église, veu qu'il n'avait point aucun testicule. Je leur conseillay de le marier, le voyant gaillard, non efféminé. Il est encore en vie et a eu deux enfants de son mariage (1). »

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(1) *The Edinburgh méd. and surg. Journal;* et *Gazette médicale.* Paris, 1838, n° 31.

Et comme s'il eût senti combien peu était rigoureuse une semblable observation, le même auteur raconte l'histoire d'un homme qui fut pendu, pour viol, à Montpellier, et dont il fut chargé de faire l'autopsie. « Entre autres choses, dit Cabrol, le plus rare c'est qu'il ne lui feust trouvé aucun testicule, ni extérieurement ni intérieurement; bien lui trouvasmes-nous ses gardouches ou greniers autant remplis de semence qu'à homme que j'aye anathomisé despuis; cela estonna merveilleusement toute l'assistance (2). »

Bien que l'opinion de Cabrol sur l'inutilité des testicules dans l'acte générateur ne soit plus admise aujourd'hui, et qu'il ne se rencontrât pas un médecin capable de conseiller le mariage à un homme dont l'absence des testicules serait un fait parfaitement acquis, il s'agit de savoir si cette absence peut congénitalement se produire.

Follin paraît disposé à attribuer à l'atrophie les cas où cette glande ne se rencontre pas (3). A l'appui de cette manière de voir, il cite deux faits qui lui semblent concluants :

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(1) Cabrol, *Alphabet anatomique*. Tournon, 1594, in-4, p. 87.

(2) Cabrol, *Ibid.*, p. 102.

(3) Follin, *Études anatomiques et pathologiques sur les anomalies de position et les atrophies du testicule* (*Archiv. génér. de méd.*, juillet 1851).

« Le premier, dit-il, a été montré par moi à la Société de biologie en août 1850; le second a été communiqué par M. Gosselin à l'Académie de Médecine (1). Je donnerai ces deux faits avec quelques détails, car, outre leur rareté, ils me paraissent avoir cela de remarquable qu'aucune autre lésion de l'appareil génital ne les accompagne; ainsi, sur le scrotum, nulle cicatrice, et, dans les autres voies excrétoires du sperme, rien qui indique même une différence avec le côté opposé. »

Ces deux observations, que l'on trouvera dans le recueil que je cite, n'ont peut-être pas toute l'importance que semble leur attribuer Follin, car rien ne prouve, en effet, que le testicule manquant ait originairement existé, et qu'il faille attribuer son absence à sa disparition progressive. On peut, avec une égale raison, croire à une absence congénitale de la glande.

Quoi qu'il en soit, l'anomalie dont je m'occupe peut ne porter que sur un des testicules ou les atteindre tous les deux à la fois.

Dans le premier cas, l'anorchidie est dite simple ou unilatérale; dans le second cas, l'anorchidie est double.

Tant que ce vice de conformation n'affecte qu'un seul côté et que l'appareil spermatique existe intact du côté opposé, le mal, au point de vue de la génération, n'est pas très-considérable, car des faits prouvent tous les jours que la présence d'un seul testicule suffit pour accomplir la fécondation.

Mais le dommage est plus réel et irrémédiable si les deux glandes manquent à la fois.

Quand un seul testicule est absent du scrotum, le diagnostic différentiel peut offrir des difficultés insurmontables, car il n'existe alors aucun signe qui puisse faire croire à l'arrêt de la glande dans la cavité abdominale. En admettant même l'opinion de Follin sur l'atrophie du testicule retenu dans un point de son parcours, opinion dont je parlerai longuement tout à l'heure, on n'a, pour s'éclairer, ni le critérium des désirs vénériens, ni les ressources du microscope, car l'individu pourvu d'un testicule ressent les ardeurs de l'amour, comme le prouve le fait communiqué par M. Gosselin, et présente dans sa liqueur séminale des animalcules spermatiques.

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(1) Gosselin, *Bulletin de l'Académie nationale de médecine*, séance du 4 février 1851. Paris, 1851, t. XVI, p. 463.

Mais si les deux testicules manquent, et surtout si cette absence est congénitale, le doute n'est plus possible. L'individu n'a alors aucun des caractères qui constituent l'homme : ni désirs vénériens ni éjaculation ; ses formes arrondies et sa peau blanche et dépourvue de poils lui donnent quelque chose de féminin, que légitiment de plus la timidité et la pusillanimité de son âme.

L'anorchidie double dont Blandin, Velpeau et Curling avaient contesté l'existence, n'est plus mise en doute aujourd'hui, depuis les recherches si consciencieuses de Godard (1) ; le professeur Wensel Gruber, de Saint-Pétersbourg (2), en a relevé jusqu'à huit cas authentiques, c'est-à-dire confirmés par l'autopsie. Malheureusement le premier de ces faits est celui de Cabrol, cité plus haut, et relatif à un individu pendu pour viol ; ceux de Godard sont plus concluants et ne laissent aucun doute sur l'influence de l'anorchidie double non-seulement sur la fonction génitale, mais encore sur l'habitude extérieure et le moral du malade dont j'ai parlé tout à l'heure.

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(1) Godard, *Recherches tératologiques sur l'appareil séminal de l'homme*. Paris, 1860, p. 60 et suiv.

(2) Grüber, *Medizinische Jahrbücher*, Band XV, Wien, 1868, p. 37.

Monorchidie et cryptorchidie. — Depuis Hunter, les déplacements congénitaux des testicules ont, sous le rapport qui nous occupe, une importance considérable, car le grand chirurgien anglais a émis l'opinion que les testicules absents du scrotum, c'est-à-dire retenus dans un point de leur parcours, étaient atrophiés, et par conséquent cessaient de sécréter le sperme.

Cette opinion, combattue par Richard Owen, annotateur de Hunter (1), auquel s'était joint Curling (2) jusque dans ces derniers temps, a été reprise par Follin, qui s'est attaché à montrer les transformations que subit la glande séminale retenue dans le ventre.

Outre une diminution notable dans son volume, le testicule, selon cet auteur, se modifie encore dans sa structure : tantôt il revêt une apparence fibreuse par suite du retrait de la substance séminifère, et tantôt il devient le siége d'une transformation graisseuse complète par le dépôt, dans son intérieur, d'une matière grasse qui, comme dans le tissu musculaire, fait disparaître l'élément normal de l'organe.

Mais pour nous le fait le plus grave, dans cette altération des testicules, est l'absence absolue de tout zoosperme. « Nous devons déjà à un vétérinaire fort distingué, M. le professeur Goubaux, dit Follin, des détails intéressants sur la structure des testicules retenus dans le ventre chez le cheval (3). Outre des altérations dans le volume et dans l'aspect de la substance du testicule, devenue aussi molle que celle du fœtus, M. Goubaux a remarqué que le sperme contenu dans la vésicule séminale, du côté où le testicule était dans l'abdomen, n'offrait pas d'animalcules spermatiques. J'ai, dans trois cas, examiné le sperme contenu dans la vésicule séminale correspondant au testicule retenu dans l'anneau, et chaque fois j'y ai trouvé une absence complète de spermatozoïdes. L'examen comparatif du côté opposé m'a fait voir que les spermatozoïdes ne manquaient pas dans la vésicule séminale. Dans un quatrième cas, il n'y avait des spermatozoïdes ni d'un côté ni de l'autre : il s'agissait là d'un homme mort à Bicêtre d'une affection des centres nerveux, datant de longues années. Mais ce qu'on trouve constamment dans ce liquide, dépourvu de spermatozoïdes, c'est une abondante production d'une matière jaunâtre, qui se fragmente, comme les matières grasses, en globules arrondis, et me paraît en avoir quelques-unes des propriétés (1). »

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(1) J. Hunter, *Œuvres complètes*, trad. par G. Richelot. Paris, 1843. t. IV, p. 63 et suiv.

(2) Curling, *Traité pratique des maladies du testicule*, etc., trad. sur la 2e édit. par Gosselin. Paris, 1857, p. 28.

(3) *Recueil de médecine vétérinaire pratique*, t. XXIV, p. 131.

Cette opinion de Hunter, si savamment défendue par Follin, a été reprise par Curling, qui l'avait antérieurement combattue : « Les faits que je vais présenter dans ce travail, dit-il, viennent confirmer l'opinion de Hunter d'une façon remarquable, et m'ont amené à changer complétement ma manière de voir sur le point dont il s'agit (2). » Et plus loin, vers la fin de son mémoire, Curling ajoute : « Ce n'est pas sans beaucoup d'hésitation que je mets en question les prétentions à la paternité dans les cas de ce genre; mais il est à remarquer que, jusqu'à présent, il n'est pas un seul cas d'ectopie des testicules où il ait été nettement démontré que ces glandes fussent aptes à sécréter un fluide fécondant. Les observations réunies dans ce mémoire paraissent suffisantes pour faire voir que, en règle générale, elles ne le sont pas; et quoique je ne voie pas de raison positive pour qu'il n'y ait pas des exceptions, cependant l'évidence fait défaut pour établir qu'il y ait, en réalité, une telle exception dans l'un quelconque des cas de paternité réputée que j'ai mentionnés ci-dessus. »

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(1) Follin, *Archives générales de médecine*. 1851, t. XXVI, p. 264.

(2) Curling, *British and foreign med. chir. Review;* avril 1864, trad. par l'*Union médicale*, 6 et 13 avril 1865.

Cependant des faits ont été opposés à l'opinion de Hunter, défendue par Follin, Godard (1) et, comme nous venons de le voir, par Curling. Mais aucun de ces faits n'a l'autorité scientifique qui impose la conviction, tandis que les observations rapportées par les partisans de Hunter reposent toutes sur l'inspection du liquide émis par les cryptorchides; pas un des faits invoqués contre l'opinion de Hunter n'a cet examen pour base; tous ses contradicteurs se contentent de l'aveu de la paternité. Moi-même, dans la première édition de ce livre, j'avais admis, sur parole, la fécondité d'un cryptorchide que j'avais observé; mais je me suis convaincu, depuis cette époque, que de pareils faits ne doivent être admis qu'à la suite de l'inspection du sperme, c'est-à-dire de la constatation de la présence de zoospermes.

Cette preuve, la seule irréfragable, faisant défaut dans tous les faits énoncés, il est sage de suivre l'exemple de Curling et d'adopter la loi formulée ainsi par Godard (2) : « 1° les hommes dont les testicules, quoique développés, sont incomplétement descendus, sont puissants, éjaculent du sperme privé d'animalcules, mais ne peuvent féconder ; 2° les hommes dont l'appareil testiculaire incomplétement formé des deux côtés n'est représenté que par les canaux déférents descendus dans le scrotum peuvent accidentellement entrer en érection, mais n'éjaculent jamais. »

Cette infécondité a lieu quelle que soit la place que le testicule occupe en dehors du scrotum, car on sait que la glande séminale peut s'arrêter à divers points de son parcours.

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(1) Godard, *Études sur la monorchidie et la cryptorchidie chez l'homme*. Paris, 1857.

(2) *Loc. cit.*, p. 143.

Sous ce rapport, les déplacements des testicules se rangent dans quatre catégories, que Follin énumère dans l'ordre suivant :

1° Cas où le testicule est retenu dans le ventre ou au canal inguinal dans ses rapports normaux avec l'épididyme et le canal déférent, le scrotum contenant du tissu cellulaire ;

2° Cas où le testicule est retenu dans le ventre ou au canal inguinal, l'épididyme et le canal déférent se trouvant, en plus ou moins grande partie, dans le scrotum, en avant du testicule ;

3° Cas où le testicule s'est dirigé vers le périnée ;

4° Cas où le testicule a passé à travers le canal crural.

Je n'ai point à décrire ici ces quatre variétés de déplacements, dont l'histoire appartient à l'anatomie chirurgicale des testicules ; je dirai seulement qu'il ne faudrait déclarer un homme stérile, pour cause d'ectopie testiculaire, que si les deux testicules étaient retenus dans le ventre ou à l'aine, car la présence d'un seul de ces organes dans le scrotum suffit, — et les exemples en sont nombreux, — pour satisfaire à toutes les conditions de la fécondité.

L'avenir réservé à l'ectopie des testicules doit être, pour le chirurgien, un motif de surveillance dans les premiers temps de la vie, car alors il est peut-être possible d'amener, par des ventouses ou des pressions douces et répétées, la glande dans le scrotum et de l'y retenir au moyen d'un bandage ; mais plus tard, lorsque l'anneau inguinal a perdu l'élasticité de ses parois, que le testicule a pu contracter des adhérences avec les parties voisines qui le pressent, sa migration est difficilement réalisable, et le malade est condamné, presque à coup sûr, à une infirmité inguérissable.

Je n'ai pas à m'arrêter aux autres vices de conformation des testicules, tels que l'inversion, l'hypertrophie, la polyorchidie (testicules surnuméraires), la synorchidie (fusion des testicules), etc., parce que toutes ces anomalies n'exercent aucune influence sur les propriétés copulatrice et fécondante, uniques sujets de cet ouvrage.

2° *Atrophie des testicules.*

J'ai déjà fait pressentir plus haut que la diminution dans le volume des testicules n'était pas toujours due à des circonstances accidentelles, et que l'on rencontrait quelques-unes de ces atrophies dont un vice de conformation était bien réellement la seule raison d'être. Aussi, pour ne pas scinder cet article, ai-je réservé pour cette place l'histoire de cette anomalie, qui n'a une importance véritable pour nous que lorsqu'elle s'étend sur les deux testicules.

L'état anatomique du testicule atrophié n'est pas le même dans tous les cas : tantôt, lorsqu'il n'y a pas fonte complète du tissu testiculaire, la tunique albuginée, flasque et décolorée, forme une poche trop vaste pour les restes de l'organe, et donne alors, comme dit Follin, la sensation obscure d'un liquide contenu dans cette loge fibreuse; tantôt la substance testiculaire, subissant une transformation, passe ou à l'état fibreux, surtout quand une phlegmasie est la cause de l'accident, ou à l'état graisseux, ainsi que Follin en rapporte un exemple; tantôt enfin la disparition est complète, et il ne reste plus des testicules que les enveloppes sur lesquelles l'épididyme se conserve parfois dans une intégrité parfaite.

Quand un seul testicule est atteint, le diagnostic est ordinairement facile, parce qu'on a comme point de comparaison le testicule sain ; mais quand les deux glandes ont subi un arrêt de développement, qu'il n'y a que simple diminution dans leur volume, on peut être embarrassé pour se prononcer, car la grosseur de ces organes est essentiellement variable selon les individus.

Mais s'il peut être intéressant, pour l'histoire morbide du testicule, de noter la limite exacte qui marque un changement en plus ou en moins dans son volume, il nous importe moins de prendre un tel souci, si ce n'est pour donner l'éveil au malade et prévenir une aggravation, voire même une fonte complète des organes.

Cependant cet embarras n'est pas tel que d'aucuns ont voulu le dire : quand l'atrophie tient à un arrêt de développement et que l'individu a atteint l'âge de la puberté, la différence dans le volume de ses testicules, comparé à celui des hommes de son âge, est trop marquée pour laisser le moindre doute sur la véritable cause de cette différence; d'ailleurs l'appareil génital externe tout entier, la verge et le scrotum n'ont pas suivi le développement progressif des autres parties du corps, et l'adulte offre alors, comme je le dirai tout à l'heure, un pénis et des testicules d'un enfant de cinq à huit ans.

Quand l'atrophie arrive d'une manière accidentelle, le malade a toujours, pour se guider, la comparaison de l'état présent avec l'état passé, de telle sorte qu'à moins d'une diminution imperceptible le diagnostic n'offre pas, dans la pratique, les difficultés qu'ont élevées les auteurs en exigeant une mensuration absolue.

Le pronostic, au point de vue de la fécondité, est toujours excessivement grave; mais cette gravité n'est réelle, il ne faut pas se lasser de le répéter, qu'autant que l'atrophie attaque les deux testicules, et encore, dans ce cas, il est nécessaire que l'atrophie soit complète ; car je dirai tout à l'heure que dans les simples arrêts de développement, par exemple, il n'est pas rare de voir l'appareil génital sortir un jour de sa léthargie, et les testicules, sous l'influence de cette vie nouvelle, acquérir le volume normal qu'ils possèdent dans l'âge adulte.

Le traitement, quand il est possible d'espérer dans les ressources de l'art, est nécessairement subordonné à la cause qui a donné naissance à l'atrophie.

Ces causes sont nombreuses, et pour mettre quelque ordre dans leur énumération je les range sous six chefs principaux :

1° Arrêts de développement ou vices de conformation.
2° Lésions de l'innervation ;
3° Compression ;
4° Inflammation ;
5° Actions de certaines substances ;
6° Causes diverses et inconnues.

1° *Arrêt de développement.* — Je ne reviendrai pas ici sur ce que j'ai dit plus haut de l'arrêt de développement qu'éprouvent les testicules retenus dans un point de leur parcours. Je n'entends parler, en cette place, que de l'atrophie des testicules parvenus dans les bourses.

Les cas de ce genre sont moins rares qu'on ne pense : Wilson, (1) Lallemand, (2) Curling (3), etc., en rapportent des exemples ; j'en ai moi-même observé quelques-uns, et j'ai longuement rapporté, dans la première partie de cet ouvrage (4), l'histoire d'un jeune Brésilien, que la ténuité de sa verge empêchait de goûter les voluptés du coït. Je ne rappelle ce fait que pour faire remarquer que la diminution des testicules, quelque considérable qu'elle soit, n'est pas toujours un motif d'impuissance et de stérilité, ainsi que le prouve également le fait de Wilson, rappelé par Follin : « Wilson, dit-il, fut consulté par un homme de vingt-six ans, qui avait le pénis et les testicules aussi petits que ceux d'un enfant de huit ans. Cet homme se maria, devint père de famille, et à vingt-huit ans ses parties s'étaient accrues au volume de celles d'un adulte. » L'exercice de la fonction génitale suffit, dans ces cas, pour amener les testicules à un volume plus considérable, comme on le voit par le fait de Wilson et par celui que j'ai cité moi-même.

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(1) Wilson, *Lectures on the structure and physiology of the male and genital organs*. London, 1821, p. 424.

(2) Lallemand, *Des pertes séminales involontaires*. Paris, 1836-1842, t. II, p. 380.

(3) Curling, *Traité pratique des maladies du testicule*, p. 66.

(4) Voyez page 93.

Mais quand l'atrophie est complète, quand la substance testiculaire est entièrement absente de la tunique albuginée, l'art est impuissant, la stérilité est incurable, et de plus tout le sens génital est mort : nul désir vénérien, nulle aspiration vers les voluptés amoureuses, que serait d'ailleurs incapable de faire goûter et d'éprouver elle-même une verge réduite à des proportions microscopiques.

Cependant MM. Legendre et Bastien (1) rapportent un fait de petitesse extrême des testicules, restés très-haut dans le scrotum, et s'accompagnant d'une verge normale ; M. le Dentu se demande avec raison si ces lésions testiculaires étaient bien réellement primitives, et si l'on ne devait pas les rapporter à une migration difficile (2).

Pourtant, immédiatement après ce doute, M. le Dentu rapporte une observation de M. Hybord, dans laquelle la petitesse de la verge accompagnait l'atrophie des testicules, il est vrai, mais où le sujet avait les désirs vénériens et se livrait au coït.

Il rappelle aussi le fait mentionné par M. Rizet (3) d'un soldat chez lequel la virilité, au dire du malade, était conservée malgré l'arrêt de développement des testicules et de la verge.

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(1) Legendre et Bastien, *Gazette médicale*, 1859.

(2) Le Dentu, *Des anomalies du testicule*. Paris, 1869, p. 49.

(3) Rizet, *Recueil de méd. et de chirurg. milit.* 1862.

Ces trois faits ne peuvent infirmer la règle que j'ai posée plus haut, car dans celui de MM. Legendre et Bastien tous les renseignements manquent, il n'y a que l'autopsie ; dans les deux autres, on n'a que les affirmations des malades, suspectes en pareil cas, et que pour sa part M. Rizet n'admet qu'avec les plus grandes réserves.

2° *Lésions de l'innervation.* — Les lésions de l'innervation comme causes d'atrophie des testicules ne peuvent être mises en doute ; les faits abondent pour en constater la réalité : Lawrence (1), Curling (2), Larrey (3), Lallemand (4) citent des exemples d'atrophie testiculaire survenue à la suite de blessures à la tête. Wardrop raconte que le même accident survint chez un homme qui avait reçu un coup violent au niveau de la région lombaire (5) ; enfin, et pour terminer par une considération de physiologie comparée, Follin écrit : « M. le docteur Brown-Sequard, dans ses belles expériences sur la section et la régénération de la moelle chez les cobayes, m'a dit s'être assuré que les testicules subissaient, après cette lésion, une diminution manifeste de volume (6). »

3° *Compression.* — L'effet que la compression amène dans la consistance et le volume des testicules, que celle-là s'exerce sur la glande elle-même ou sur le canal déférent, a été noté dès la plus haute antiquité par Hippocrate et par Galien, et d'aucuns, depuis eux, ont considéré certaines affections qui déterminaient une semblable compression, l'hydrocèle, par exemple, comme des causes certaines de stérilité. Cependant il faut se garder d'attribuer à quelques-uns de ces accidents une importance qu'ils n'ont pas, à moins qu'ils n'aient acquis une durée et un développement considérables; ainsi l'hydrocèle et le varicocèle, par exemple, sont accusés d'être des motifs de stérilité, et l'on voit pourtant, tous les jours, des hommes portant l'une de ces deux affections satisfaire parfaitement aux conditions procréatrices.

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(1) Lawrence, *Medico-chirurg. Transact.*, t. IV, p. 214.

(2) Curling, *Treatise on the diseases of the testicle.*

(3) Larrey, *Mémoires de chirurgie militaire*, p. 262.

(4) Lallemand, *Pertes séminales involontaires*, t. II, p. 42.

(5) Baillie, *Œuvres*, édit. de Wardrop, t. II, p. 315.

(6) Follin, *Archives générales de médecine*, juillet, 1851.

Loin de moi la pensée de nier d'une manière absolue l'action fâcheuse de ces infirmités; mais j'estime que pour amener l'atrophie du testicule cette action doit s'exercer longtemps et d'une manière assez énergique; d'ailleurs il faut se garder de porter inconsidérément un pronostic défavorable sur la capacité génératrice du malade, car il faudrait, pour que la stérilité se produisît, que la compression s'exerçât sur les deux testicules, et l'on sait qu'il est rare de rencontrer simultanément des deux côtés une hydrocèle ou un varicocèle. Cela est si vrai que Vidal (de Cassis) met au nombre des causes du varicocèle l'influence héréditaire, lui qui cependant fait valoir la stérilité comme un motif déterminant de l'opération.

Quoi qu'il en soit, il est impossible de nier l'action fâcheuse d'une compression longtemps continuée, que cette compression soit produite par une hydrocèle, par une hématocèle, par un varicocèle, par une hernie, par un éléphantiasis ou par tout autre phénomène; cette possibilité doit entrer dans l'appréciation des causes de la stérilité chez l'homme.

Dans la très-grande majorité des cas, surtout quand l'atrophie testiculaire n'est pas complète, on peut prévenir la fonte totale de la glande, en faisant cesser la compression. Vidal (de Cassis) raconte qu'un jeune homme, porteur d'un varicocèle congénital des deux côtés, perdit sa voix de castrat et recouvra tous ses attributs mâles, après la double opération du varicocèle (1).

La gymnastique, un régime alimentaire fortifiant et excitant tout à la fois et l'exercice modéré de la fonction génitale sont, avec les bains de mer et quelques embrocations ammoniacales ou cantharidées, les seules ressources qui, après l'éloignement de la cause qui produisait la compression, puissent aider le retour de la fonction génitale; celle-ci d'ailleurs revient le plus souvent d'elle-même, sans le secours d'une thérapeutique quelconque.

4° *Inflammation.* — Hunter, qui reconnaît expressément que la compression peut amener l'atrophie des testicules, et il en cite comme preuves les cas de hernie dont Pott a rapporté des exemples, et l'hydrocèle dont lui-même fut témoin, Hunter, dis-je, n'est pas moins explicite sur l'influence de l'inflammation, quelle que soit la cause de cette dernière : « D'autres fois il (le testicule) s'enflamme, dit-il, ou d'une manière spontanée, ou à cause de sa simpathie avec l'urèthre; il devient gros et commence ensuite à diminuer, comme dans la résolution d'une inflammation ordinaire; mais cette diminution ne s'arrête point lorsque le testicule est réduit à son état naturel, elle continue encore jusqu'à ce qu'il disparaisse entièrement (2). »

Et Hunter rapporte trois faits de ce genre, dont je demande la permission de transcrire le second, parce qu'il nous offre l'exemple de la disparition successive des deux testicules. Hunter l'inscrit dans son livre comme lui ayant été communiqué par Nanfan.

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(1) Vidal (de Cassis), *De la cure radicale du varicocèle par l'enroulement des veines du cordon spermatique.* Paris, 1850.

(2) J. Hunter, *Traité de la maladie vénérienne,* traduit par le docteur G. Richelot, avec des notes et des additions, par le docteur Ph. Ricord. 2ᵉ édit. Paris, 1852, p. 374.

« Un jeune homme d'environ dix-huit ans, qui n'avait jamais eu aucune maladie vénérienne, a perdu ses deux testicules de la manière suivante : le 3 février 1776, après avoir patiné pendant quelques heures, sans avoir, à sa connaissance, reçu aucune lésion, il éprouva une violente douleur dans le testicule gauche, qui s'enflamma, et qui en peu de jours acquit un volume considérable. Un chirurgien, qui fut appelé auprès du malade, employa les moyens de traitement ordinairement usités en pareil cas. L'inflammation et le gonflement se dissipèrent graduellement dans l'espace d'environ six semaines, et il ne resta plus qu'un peu d'induration. On appliqua alors un emplâtre mercuriel qui fut abandonné après avoir été porté pendant quelque temps. Depuis cette époque le testicule a continué à décroître graduellement, et maintenant il n'est pas plus gros qu'une fève de marais ; le corps du testicule est entièrement détruit, et ce qui reste paraît n'être autre chose qu'une partie de l'épididyme. Cette portion n'est le siége d'aucune douleur, à moins qu'on ne la comprime ; elle est très-dure et inégale à sa surface. Le cordon spermatique n'est pas le moins du monde altéré. Le 20 octobre 1777, le malade fut pris des mêmes symptômes dans le testicule droit, sans cause appréciable, et je fus appelé à lui donner des soins. Il fut saigné immédiatement, prit une mixture laxative, puis une mixture saline avec le tartre stibié ; on fit des fomentations et des embrocations sur le testicule avec l'esprit de Mindererus et l'alcool. Le 27, on appliqua un cataplasme de farine de graines de lin arrosé d'eau végéto-minérale. Ce traitement fut continué jusque vers le milieu du mois de novembre. L'inflammation se dissipa, et le testicule parut être dans son état naturel. Le 19 décembre, on m'appela de nouveau. Le testicule paraissait s'indurer et diminuer de volume de la même manière que l'autre, ce qui affectait vivement le malade. Je prescrivis quelques pilules de calomel et d'émétique, dans l'espoir d'accroître la sécrétion des glandes en général et de déterminer quelque modification dans le testicule. Ce traitement parut d'abord produire un bon effet, mais il ne tarda pas à devenir inefficace, et le testicule commença à s'atrophier comme avait fait l'autre.

» Je fus appelé en consultation avec Adair et Pott, mais nous ne trouvâmes rien qui pût offrir quelques chances de succès. Je conseillai au malade de faire fonctionner l'organe autant que ses penchants naturels pourraient l'y porter, mais tout fut sans résultat. Le testicule continua à décroître jusqu'à ce qu'enfin il n'en restât plus aucun vestige. »

De son côté, Hamilton (1) cite deux observations d'orchite parotidienne, avec atrophie du testicule consécutivement ; il ne serait pas difficile de trouver des exemples d'orchite vénérienne, suivie du même accident.

Ainsi donc, que la cause soit spontanée, métastatique, vénérienne, traumatique ou autre, il faut reconnaître que l'inflammation testiculaire amène, dans certains cas, la fonte de l'organe. Il est difficile, pour ne pas dire impossible, de noter les conditions qui favorisent ce dépérissement ; il faut admettre, pour les cas où il se produit, une prédisposition spéciale, diathésique, pour ainsi parler, dont les signes échappent entièrement à nos moyens d'investigation.

Le pronostic, qui ne peut être porté que lorsque le volume du testicule a commencé à diminuer, est toujours grave ; car il est à craindre, comme on l'a vu dans l'observation rapportée par Hunter, que la cessation de l'inflammation n'arrête pas la fonte du testicule. Selon toutes les probabilités, le travail phlegmasique désorganise la substance testiculaire, et la métamorphose en une espèce de lymphe plastique, laquelle est plus tard lentement résorbée. C'est ce qui ressort à peu près de toutes les observations de ce genre : la diminution du testicule n'a jamais lieu pendant l'inflammation elle-même ; elle commence après la disparition de tous les symptômes de cette dernière, et quelquefois longtemps après, alors qu'on semblait ne plus rien devoir craindre sous ce rapport.

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(1) Hamilton, *Philos. Transact.* Edinb., t. II, art. IX, p. 59.

Cette manière de voir trace tout naturellement la conduite du chirurgien. Les antiphlogistiques sous toutes les formes sont appelés à combattre l'inflammation et à en diminuer les ravages ; et les fondants, tels que les préparations mercurielles et iodées, la ciguë, etc., etc., ont pour but de prévenir ou de dissoudre les engorgements et les nodosités que la phlegmasie peut produire.

Mais quand l'atrophie du testicule a commencé, il faut impérieusement éloigner les fondants, sous peine de hâter l'accident que l'on se propose de combattre, et insister sur les toniques et même les astringents. Les eaux ferrugineuses, tant à l'intérieur qu'à l'extérieur, les bains de mer, l'hydrothérapie, les bains de rivière ont dans ces circonstances un avantage marqué. Le coït, ou tout au moins les excitations vénériennes modérées sont à mon avis indispensables, car l'exercice régulier d'une fonction peut ramener l'organe dans les conditions normales de sa structure : c'est ce que nous voyons tous les jours pour des muscles atrophiés auxquels le jeu des parties qui les soutiennent redonne la force et le volume qu'ils avaient perdus. Mais il ne faut pas, d'un autre côté, que ces excitations vénériennes et surtout que le coït deviennent des excès, car on précipiterait à coup sûr un dénoûment funeste en augmentant, par une excitation voisine de l'irritation, la puissance absorbante qu'il s'agit au contraire de modérer et de conduire.

5° *Action de certaines substances.* — On ne doit pas espérer trouver ici, je ne dirai pas la description, mais simplement l'énumération de cette foule de substances auxquelles l'imagination de nos pères prêtait les vertus les plus surprenantes; ce livre n'est point un recueil de fables ridicules; il nous importe peu de savoir, par exemple, qu'Arnaud de Villeneuve recommandait, pour éteindre la sécrétion spermatique, de porter dans sa poche un couteau dont le manche était taillé dans le bois de l'*agnus castus*. Où voit-on encore des femmes mettre leur chasteté sous la sauvegarde de lits faits avec les feuilles du vitex, du nénuphar ou de la laitue? Laissons donc toutes ces histoires absurdes où la science et la raison n'ont que faire, et où le merveilleux coudoie la jonglerie et le mensonge.

Cependant ne poussons pas le scepticisme jusqu'à nier l'action bien manifeste de certains agents sur les glandes en général, et en particulier sur les testicules. Parmi ces agents, il en est deux surtout dont l'influence désorganisatrice ne saurait être mise en doute; je veux parler de l'iode et du sulfure de carbone.

Depuis que l'iode a été introduit dans la thérapeutique, son emploi a pris une telle extension qu'il a été facile de recueillir de nombreux exemples de son action délétère. M. Cullerier en a rassemblé un assez grand nombre de cas (1), et j'en ai moi-même recueilli quelques-uns.

J'ai souvent remarqué, en administrant l'iodure de mercure ou de potassium contre les accidents constitutionnels de la syphilis, que les malades éprouvaient un allanguissement notable dans les désirs vénériens et un affaiblissement manifeste dans leur puissance virile, avant même qu'il fût possible de constater et même de soupçonner une diminution dans le volume des testicules; j'ai même connu une personne chez laquelle cette action des préparations iodées était si active qu'il lui suffisait, pour éprouver les accidents dont je viens de parler, de prendre une dose minime de ce médicament. Peut-on admettre, dans ces cas, que l'iode, avant même de commencer la désorganisation ou la fonte de la substance testiculaire, suspend, ralentit ou tout au moins pervertit la sécrétion séminale, au point d'amener un trouble notable dans la fonction dont cette sécrétion est tout à la fois l'excitant et la fin ? Ou bien l'iode, en dehors de son influence sur le tissu du testicule, exerce-t-il aussi un empire néfaste sur le sens copulateur?

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(1) Cullerier, *Mémoires de la Société de chirurgie*, t. I.

Cette dernière hypothèse, que rien ne justifie, doit s'effacer devant l'action bien réelle de l'iode sur la substance testiculaire; aussi en attribuant à cette action l'allanguissement des désirs vénériens et l'affaiblissement de la puissance copulatrice, on rentre dans la loi physiologique qui place dans les testicules le siége et le moteur de la virilité. Il est probable qu'il s'opère alors dans ces organes un travail sourd de désorganisation, dont les effets se font d'abord sentir pendant l'exercice de la fonction, avant de se traduire par un désordre anatomique de la glande. Le sperme, en effet, examiné au microscope, présente des animalcules et moins vivants et en moins grande quantité qu'à l'état normal.

Bien évidemment, une modification fâcheuse s'est opérée dans la sécrétion du sperme.

Si l'iode est continué longtemps, s'il est surtout administré en nature, comme dans le traitement de la phthisie pulmonaire par la méthode de MM. Chartroule et Piorry, cette modification se trahit par des signes non équivoques d'atrophie testiculaire. J'en ai vu un remarquable exemple dans lequel les inhalations des vapeurs d'iode avaient bien réellement amendé une phthisie pulmonaire, mais qui avaient amené dans l'espace de six à huit mois la fonte totale des testicules Le malade, à l'époque où je l'examinais, avait vingt-sept ans, et ne possédait plus, dans le scrotum flétri et diminué à son tour de volume, que deux espèces de poches ratatinées et plates, suspendues au canal déférent qui, lui, était dans toutes les conditions normales. Chez cet homme, l'impuissance était complète, la stérilité absolue.

En présence de pareils faits accomplis, l'art n'a qu'à se voiler la face; il ne lui est pas permis de tenter l'impossible; mais il peut heureusement intervenir avant que la destruction testiculaire soit entière; alors, mais seulement alors, en éloignant la cause qui produit la fonte des testicules et en recourant aux toniques généraux, à une alimentation substantielle et à l'exercice modéré de la fonction génitale, on peut espérer arrêter une désorganisation funeste et conserver à l'organe atteint une force de sécrétion suffisante, non-seulement pour exciter l'ardeur vénérienne, mais encore pour produire et animer l'élément essentiel à la fécondation, c'est-à-dire les zoospermes.

Le sulfure de carbone, d'après les recherches de M. le docteur Delpech, ne frappe pas seulement d'impuissance, comme je l'ai dit précédemment, les ouvriers qui travaillent dans l'industrie du caoutchouc, mais encore il porte atteinte à la vitalité des testicules chez les sujets exposés de bonne heure à son action fâcheuse : « L'obstacle apporté au développement de la fonction, dit le docteur Delpech, arrête le développement de l'organe; chez D... en effet, les testicules avaient évidemment subi un arrêt de développement. Entré à douze ans dans l'industrie du caoutchouc soufflé, il n'avait jamais vu ses instincts génésiques se développer normalement. C'est là un fait qui me semble d'autant plus important, que dans l'observation X le même résultat s'est produit; avec un développement normal de la verge, les testicules sont extrêmement petits. Cette disproportion coïncide avec ce fait qu'à l'époque de la puberté le sujet de cette observation a été, comme le précédent, atteint de paraplégie sulfo-carbonique (1). »

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(1) Delpech, *Nouvelles recherches sur l'intoxication spéciale que détermine le sulfure de carbone*, p. 26.

Dans tous les cas, alors même que l'impuissance n'est pas complète et que l'atrophie testiculaire n'est pas très-prononcée, la liqueur séminale n'a plus de propriétés fécondantes ; l'intoxication sulfo-carbonique amène au moins et à coup sûr la stérilité.

Nous avons vu précédemment que le phosphore est le médicament qui a rendu à M. Delpech le plus de services contre les accidents qu'il signale ; je ne puis que m'en référer à son expérience et répéter ce que j'ai dit ailleurs (1).

6° *Causes diverses et inconnues.* — S'il fallait en croire un fait rapporté par Wardrop, le système circulatoire ne serait pas sans influence sur l'atrophie testiculaire. Cet auteur raconte que, chez un homme dont le scrotum ne contenait plus que la tunique albuginée, on trouva un anévrysme de l'aorte formé à l'origine des artères spermatiques qui étaient complétement oblitérées (2). Bien évidemment, ce n'est point à l'anévrysme, mais bien à l'oblitération des artères spermatiques, qu'il faut attribuer, dans ce cas, l'atrophie des testicules. La raison en est trop simple pour nous y arrêter davantage.

Mais en est-il de même des excès vénériens auxquels Larrey et B. Brodie prêtent une influence certaine ? Il faudrait peut-être s'entendre sur la nature même de cette influence, avant de la nier ou de l'accepter sur la simple déclaration de ces deux hommes éminents.

Si l'on suppose que les excès vénériens amènent l'atrophie des testicules par suite de l'affaiblissement dont ils frappent l'organisme tout entier, je nie formellement cette action, parce qu'elle choque les notions les plus élémentaires de la physiologie.

Si, au contraire, on considère les excès vénériens comme une source féconde et permanente d'excitations testiculaires, capables de déterminer dans ces glandes une inflammation désorganisatrice, je puis admettre cette explication que légitiment, jusqu'à un certain point, l'espèce d'empâtement et la douleur que l'on remarque dans les testicules après des excès de coït.

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(1) Voyez la page 244.

(2) Baillie, *Œuvres*, t. II, 315.

Ce ne serait donc que secondairement que ces excès amèneraient l'atrophie des testicules, et l'on retomberait alors dans les cas que j'ai examinés plus haut et qui reconnaissent l'inflammation pour cause.

Enfin, dans un certain nombre de circonstances, il est impossible de rattacher à quoi que ce soit l'atrophie des testicules. Follin fait une déclaration identique : « Depuis que mes études, dit-il, sont dirigées vers cet objet, j'ai trouvé dans les hôpitaux un certain nombre de malades dont les testicules étaient plus ou moins atrophiés, et la cause m'a échappé, à moins qu'on n'admette les excès vénériens ou autres, comme paraissent le croire Larrey et B. Brodie (1). »

Je viens de dire la part qu'il fallait faire aux excès vénériens, je n'y reviendrai pas.

3° *Tumeurs et dégénérescences des testicules.*

Toute dégénérescence, quelle que soit sa nature, en altérant profondément les éléments anatomiques du testicule, jette fatalement le trouble dans ses conditions physiologiques, tantôt en tarissant la source de la sécrétion spermatique, et tantôt en faisant perdre au produit de cette sécrétion ses attributs de liqueur fécondante.

Je vais rapidement passer en revue, à notre point de vue, les principales dégénérescences qui affectent les glandes séminales.

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(1) Follin, *Archives de médecine*, juillet 1851, p. 283.

Testicules syphilitiques. — Curling décrit, comme étant anciennement assez commune et plus rare à notre époque, une orchite chronique simple que M. Gosselin n'hésite pas à ranger parmi les orchites syphilitiques. Je crois que M. Gosselin a raison ; si la prétendue orchite simple est aujourd'hui moins fréquente qu'anciennement, c'est que le traitement de la syphilis s'est sensiblement amélioré, surtout celui des tumeurs syphilitiques, grâce à l'iodure de potassium. Je confondrai donc, comme on le fait généralement en France, l'orchite chronique de Curling avec l'orchite syphilitique.

Le testicule peut devenir syphilitique pendant la période secondaire ou tertiaire de la syphilis. Dans le premier cas qui est le moins intéressant pour nous, une seule glande se prend, tandis que dans la période tertiaire les deux testicules se prennent ordinairement, soit en même temps, soit l'un après l'autre.

Le sarcocèle syphilitique est constitué par deux produits morbides dont l'un, fibrineux, est en dehors des tubes séminifères, et l'autre, tuberculeux, dans l'intérieur de ces mêmes tubes. La sécrétion spermatique est donc complétement supprimée par cet épanchement plastique, et le malade est stérile ; Godard va même jusqu'à dire qu'il devient presque complétement impuissant ; je ne puis être aussi pessimiste que lui, car j'ai vu des hommes qui, avec une double orchite syphilitique, avaient des désirs vénériens et exerçaient facilement le coït.

Quand la constitution du malade n'est pas trop altérée, quand la médication antisyphilitique se fait dans de bonnes conditions hygiéniques, et quand on suit le précepte de M. Ricord de donner l'iodure de potassium à haute dose, la guérison est presque certaine, et la faculté fécondante revient après la résorption de l'épanchement plastique. (1)

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(1) Voyez un mémoire de Vidal (de Cassis) dans le t. II des *Mémoires*

Cependant Curling signale une circonstance où la stérilité persiste, malgré la disparition du sarcocèle : « Quand la matière exsudée, dit-il, a disparu sous l'influence du traitement, l'organe subit quelquefois une transformation fibreuse complète. M. Hamilton a rapporté l'observation d'un homme de trente-six ans dont les deux testicules, atteints de cette forme d'orchite, subirent la transformation fibreuse, ce qui entraîna une impuisssance absolue (1). »

TESTICULES TUBERCULEUX. — Selon Godard, l'affection tuberculeuse du testicule non-seulement amène toujours la stérilité, mais encore détruit la faculté fécondante dans deux circonstances où nous ne sommes pas habitué à la voir disparaître : « Ceux, dit-il, qui n'ont qu'un seul testicule tuberculeux sont puissants mais inféconds ; leur sperme est privé de spermatozoaires, ainsi que nous l'avons constaté et montré bien des fois depuis 1854, et par l'examen du sperme éjaculé, et par l'examen du liquide contenu dans les vésicules séminales et les canaux déférents ; de plus, ceux que j'ai observés et qui étaient mariés n'avaient pas eu d'enfants depuis qu'ils avaient un testicule tuberculeux.

» Ce fait peut sembler extraordinaire, car un des testicules est absolument sain ; mais ce qui paraîtra plus étonnant encore, c'est que nous avons constaté plusieurs fois que chez eux la stérilité avait précédé d'un à deux ans le développement apparent des turbercules testiculaires (2). »

Les deux faits signalés par Godard sont peut-être moins extraordinaires qu'ils ne paraissent au premier abord ; examinons-les de près, car ils ont pour nous une grande importance.

de la Société de chirurgie, et une note de M. Gosselin, à la traduction de l'ouvrage de Curling, p. 365.

(1) Curling, *Traité pratique des maladies du testicule*, p. 360.

(2) Godard, *Étude sur la monorchidie et la cryptorchidie*, p. 144.

J'ai dit ailleurs (1) que, contrairement à certaines idées reçues, les phthisiques voyaient faiblir, avec les progrès de la maladie, leur puissance copulatrice ; leur faculté fécondante suit la même décadence ; Rayer a remarqué (2) que les vésicules des phthisiques ne contenaient pas d'animalcules ; Curling, sur douze cadavres de phthisiques, n'a découvert des spermatozoïdes ni dans l'épididyme, ni dans la substance tubuleuse (3).

La diathèse tuberculeuse, *arrivée à un certain degré*, suffit donc à elle seule pour faire disparaître les zoospermes ; par conséquent nous avons l'explication du premier fait signalé par Godard, de la perte de la fécondité dans les cas d'orchite tuberculeuse unilatérale. La sécrétion du testicule resté sain a été modifiée, non par une influence de voisinage, mais par une action délétère de la diathèse.

Cette action délétère qui s'exerce sur toute l'économie, ne se traduirait-elle pas, du côté de l'appareil génital, par l'anémie testiculaire, signalée pour la première fois par M. Gosselin, et dans laquelle les zoospermes font toujours défaut ? On sait en effet que les maladies débilitantes amènent cette anémie et que, par conséquent, la tuberculose doit presque à coup sûr produire ce résultat.

Godard, je le sais, n'a pas établi la seconde proposition d'une manière aussi large que je le fais ici ; il dit, et c'est bien là réellement sa pensée, que la tuberculisation testiculaire se fait pressentir un ou deux ans avant son éclosion, par un trouble de la fonction, c'est-à-dire que, pendant un ou deux ans, la tuberculisation testiculaire impose à l'organe un travail morbide qui suspend le travail de sécrétion ou qui en altère le produit.

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(1) Voyez la page 209.

(2) Rayer, *Archives de médecine*, août 1842, p. 487.

(3) Curling, *loc. cit.*, p. 478.

Pour qu'il en fût ainsi, c'est-à-dire pour que la stérilité précédant de deux années la tuberculisation des testicules fût l'effet d'une cause locale et non le résultat de l'action générale de la diathèse, il faudrait prouver que les phthisiques dont les testicules ne se prennent pas conservent jusqu'au bout leur puissance fécondante.

Si les nécropsies de Rayer et de Curling dont j'ai parlé plus haut ne donnent pas la date à laquelle a commencé la stérilité des phthisiques, elles prêtent à l'opinion que je soutiens un caractère de probabilité qui se rapproche beaucoup de la certitude.

Quoi qu'il en soit, et ici tout le monde est d'accord, le testicule tuberculeux est radicalement impropre à la fécondation, parce que la matière tuberculeuse se montre d'abord dans les tubes séminaux eux-mêmes dont elle tarit la sécrétion, en attendant qu'elle les crève pour se répandre dans les tissus ambiants.

De plus la tuberculisation des testicules s'accompagne presque toujours, pour ne pas dire toujours, d'altérations plus ou moins graves du côté de la prostate et des vésicules séminales, altérations qui, à elles seules, suffiraient la plupart du temps pour amener la stérilité.

Notre rôle d'historien devrait s'arrêter ici.

Cependant, sans aborder la thérapeutique si controversée de la diathèse tuberculeuse, je dirai un mot sur une question qui entre plus particulièrement dans mon sujet et sur laquelle les chirurgiens les plus autorisés sont loin d'être d'accord.

Je veux parler de la castration ou ablation du testicule tuberculeux.

La Société de chirurgie la considère comme inopportune;

L'Académie de médecine est aussi de cet avis; mais elle pense qu'on doit énucléer la partie malade, sans enlever la totalité de la glande.

Enfin d'autres chirurgiens n'admettent aucune règle tracée d'avance et subordonnent aux circonstances la conduite à tenir.

Cependant les malades, dans beaucoup de cas, réclament une intervention active et s'imaginent que la castration est une ressource nécessaire.

Dupuytren ne cédait pas à ces sollicitations, mais amoindrissait et retardait la marche du mal avec des applications de potasse caustique. Bonnet (de Lyon) et son école donnent la préférence au chlorure de zinc; à Paris, M. Verneuil a remplacé les caustiques potentiels par le fer rouge, et assure s'en trouver à merveille; le malade est ravi de conserver son testicule qui, selon la pittoresque expression de M. Verneuil, n'est qu'un *testicule moral*, il est vrai, mais enfin qui est un testicule.

TESTICULE CANCÉREUX. — Dans l'histoire de la faculté fécondante du testicule tuberculeux, Godard a signalé deux circonstances étranges dont je me suis occupé plus haut; le cancer du testicule offre également dans son histoire, envisagée à notre point de vue, une particularité curieuse qui m'autoriserait à ne pas m'en occuper ici.

Cependant je tiens à rappeler cette particularité, bien connue de tous les chirurgiens et qui sera mon excuse pour la brièveté de cet article.

Dans l'affection cancéreuse il est si rare que les deux testicules se prennent à la fois, que Vidal (de Cassis) a émis l'opinion que lorsqu'un testicule présentait, pendant quelques années, un engorgement chronique, sans que l'autre se prît, on pouvait assurer que l'affection était maligne; tandis que si les deux glandes étaient prises, on devait être certain que l'affection était bénigne et susceptible de guérison.

En faisant la part de l'exagération, on doit reconnaître cependant que dans la très-grande majorité des cas, le cancer n'envahit pas simultanément les deux testicules; de plus, et je m'abrite ici derrière l'autorité d'un maître : « Non-seulement, en effet, dit M. Gosselin, nous ne voyons guère les deux testicules malades en même temps, mais encore nous avons tous remarqué que, quand la récidive avait lieu après une ablation, elle occupait bien plutôt les ganglions et les autres viscères que le testicule opposé (1). »

Le testicule cancéreux (squirrhe, malanose ou encéphaloïde) est aussi stérile que les testicules syphilitique et tuberculeux ; la sécrétion des zoospermes est tarie ; mais, contrairement à ce qui se passe dans la tuberculisation testiculaire, cette sécrétion persiste dans le testicule resté sain, à côté de son congénère frappé de cancer.

Donc, en dehors de quelques rares exceptions, le malade n'est jamais stérile, puisqu'il a toujours un testicule qui fonctionne normalement, et que même l'ablation du mauvais testicule n'est pas un danger pour celui qui reste sans altérations.

J'ai dû parler, au point de vue de la stérilité, des affections les plus communes des testicules ; mais ces organes peuvent encore être le siége d'autres tumeurs qui en suspendent la fonction ; telles sont : la *maladie kystique du testicule*, et les *tumeurs fibreuse* et *cartilagineuse* de la glande séminale ; leur rareté me donne le droit de ménager la place dont je puis disposer, et de renvoyer pour plus de détails aux traités généraux de pathologie.

4° *Maladies des enveloppes des testicules.*

J'ai déjà indiqué plus haut (2), alors que je parlais de l'atrophie des testicules, l'action morbide, due à la compression, exercée sur ces organes par des tumeurs dont le siége se trouve sur leurs enveloppes ; ces tumeurs se rencontrent, soit dans les tuniques testiculaires, comme l'hydrocèle; soit dans le cordon spermatique, comme le varicocèle ; soit autour de ce cordon, comme la hernie scrotale ; soit dans les tissus du scrotum, comme l'hématocèle, l'éléphantiasis ; soit enfin dans plusieurs de ces éléments, comme certains corps étrangers, des débris de fœtus, etc.

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(1) Gosselin, Note de la traduction du *Traité des maladies du testicule*, p. 390.

(2) Voyez la page 554.

Je n'aurai donc pas à m'étendre longuement sur ces affections.

Cependant, je ferai de nouveau remarquer que l'atrophie testiculaire n'est pas toujours et fatalement un résultat de leur existence, et que, dans un très-grand nombre de cas, la fonction spermatique n'est altérée ni par une hydrocèle, ni par un varicocèle, ni par une hématocèle, ni par toute autre tumeur, quelque volumineuse qu'on la suppose. Il n'est pas un praticien qui n'ait constaté la vérité de cette assertion.

De plus, dans les cas où, par suite d'une compression exercée sur le testicule, la faculté procréatrice se suspend, on ne doit pas fatalement conclure à l'atrophie de la glande, car, ainsi qu'on va le voir, la stérilité, ou si l'on veut, l'absence des spermatozoïdes dans le liquide éjaculé, peut être le résultat d'une simple action mécanique, et non celui d'une altération de la glande ou de sa sécrétion.

Voici le fait assez curieux sur lequel je m'appuie :

Un homme de vingt-six ans à peu près, employé dans un des manéges de Paris, portait une double hydrocèle, qui finit par prendre un volume assez considérable pour engager le malade à me consulter, malgré l'effroi que lui inspirait la pensée d'une opération quelconque. Marié et père déjà de deux enfants, il m'avoua que depuis quelque temps il paraissait avoir perdu ses facultés fécondantes ; je constatai, en effet, que le liquide éjaculé ne contenait pas de spermatozoïdes. Je crus à une atrophie testiculaire déterminée par l'hydrocèle, et, dans la pensée d'arrêter, s'il en était temps encore, la désorganisation complète de l'organe, je proposai la ponction de la double tumeur.

Le malade, ainsi que je l'ai dit, était très-pusillanime ; il consentit à la ponction, mais ne voulut à aucun prix permettre l'injection d'une liqueur irritante, préférant, disait-il, se faire reponctionner si la tumeur se reproduisait.

Je dus céder devant une volonté si fermement arrêtée, et je ne pratiquai que la double ponction à vingt-quatre heures d'intervalle.

Comme on devait s'y attendre, surtout chez cet homme qui montait tous les jours à cheval, l'hydrocèle reparut ; mais, dans l'intervalle qui s'écoula entre la ponction de la tumeur et le retour de celle-ci au volume considérable qui avait amené chez moi le malade, ce dernier avait recouvré ses facultés fécondantes, car, outre la grossesse de sa femme, je constatai la présence des spermatozoïdes dans sa liqueur séminale.

Quand l'hydrocèle présenta de nouveau l'énorme volume de la première fois, les animalcules spermatiques disparurent encore du liquide éjaculé, et reparurent après une seconde ponction de la tumeur.

Enfin, le malade se décida à supporter l'injection iodée, qui le débarrassa tout à la fois de son hydropisie de la tunique vaginale et de sa stérilité temporaire.

Les testicules n'étaient nullement atrophiés, et il est impossible d'expliquer l'infécondité passagère de cet homme autrement que par la pression exercée par l'hydrocèle sur l'épididyme dont les parois, mises en contact, interceptaient l'intérieur de ce conduit. La présence des spermatozoïdes dans la liqueur séminale, après l'éloignement de l'obstacle à la libre circulation du sperme, produit par la pression de l'hydrocèle, confirme ce me semble cette manière de voir, qui est en quelque sorte le corollaire de ce que je dirai tout à l'heure de l'occlusion pathologique de l'épididyme.

Mais à côté de cette action purement mécanique créant un obstacle à la circulation du sperme, certaines maladies des enveloppes des testicules peuvent tarir la sécrétion spermatique et amener à leur tour la stérilité.

J'ai dit plus haut, d'après M. Gosselin, que l'anémie testiculaire s'accompagnait toujours de la disparition des zoospermes, et que lorsque cette anémie atteignait les deux testicules, la faculté fécondante était anéantie, sinon pour toujours, du moins pendant tout le temps que durait l'anémie.

Or, d'après M. Gosselin, les maladies de la tunique vaginale coïncident presque constamment avec la pâleur du tissu glandulaire : « Dans cette forme particulière d'inflammation, dit-il, de la séreuse testiculaire qui donne lieu à la formation d'une fausse membrane sur son feuillet pariétal, et plus tard à un épanchement sanguin par la rupture des vaisseaux encore faibles de cette fausse membrane, il est très-ordinaire de trouver le testicule anémié... L'anémie est enfin très-habituelle, lorsque la vaginalite s'est terminée par l'oblitération complète de la séreuse... Voici d'ailleurs comment j'explique cette coïncidence : à l'état normal, la répartition du sang se fait en quantité déterminée dans le testicule et dans la tunique vaginale ; lorsqu'une maladie de cette dernière ou une modification dans sa structure appelle une plus grande quantité de fluide nourricier, la glande en reçoit moins, et n'en reçoit plus assez pour produire l'élément capital du produit de sécrétion, c'est-à-dire les spermatozoïdes (1). »

Cependant la coïncidence signalée par M. Gosselin entre l'anémie testiculaire et l'oblitération du sac vaginal n'est pas absolue comme le démontre l'observation que j'ai rapportée tout à l'heure; on peut dire seulement qu'elle est possible et que, le cas échéant, l'attention doit être éveillée sur ce point.

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(1) Gosselin, addition au *Traité des maladies du testicule*, par Curling, p. 82.

En résumé, l'influence exercée par les maladies des enveloppes du testicule sur la faculté procréatrice est de deux sortes : 1° tantôt ces maladies n'ont qu'une action purement mécanique; elles créent un obstacle à la circulation du sperme, mais n'en tarissent pas la source; 2° tantôt, au contraire, elles portent atteinte à la nutrition de l'organe et suspendent la sécrétion spermatique.

Les antécédents et quelquefois le volume des testicules, quand l'examen en peut être fait, permet, dans la majorité des cas, de distinguer ces états l'un de l'autre; la gravité du pronostic est nécessairement subordonnée au diagnostic porté et à la nature de la maladie qui détermine la stérilité.

Il en est de même du traitement.

S'il n'existe qu'une simple pression sur les épididymes, l'éloignement de cette pression est tout ce que l'on doit faire.

Si par suite d'une compression prolongée les testicules sont atrophiés, il faut peu compter sur les ressources de la thérapeutique, ainsi que je l'ai dit dans l'article précédent.

Mais si l'infécondité est le résultat de l'anémie testiculaire, même de celle qui succède à l'oblitération de la tunique vaginale, il faut recourir à un traitement général tonique, en même temps que l'on excite la vitalité du testicule. Toutes les applications irritantes, particulièrement les sinapismes, les frictions cantharidées, phosphorées, etc., l'électricité, les douches, les fumigations, etc., sont des ressources précieuses parmi lesquelles le praticien trouve toujours des moyens d'action.

5° *Maladies des annexes du testicule. — Épididyme. — Canal déférent.*

En 1847, à peu près, un de mes bons amis, vieux et distingué praticien de la province, me disait à l'occasion de la stérilité de son mariage sur laquelle je le questionnais : « Mon infécondité date de plus de vingt ans. Pendant le cours de mes études médicales à Montpellier, des abcès, sans motif vénérien, je te jure, envahirent mes épididymes de chaque côté, et furent successivement ouverts par Delpech. Les cicatrices qui résultèrent de ces petites opérations ont obstrué les canaux épididymaires, au point que la circulation du produit testiculaire est entièrement interrompue. Tu peux, d'ailleurs, t'assurer toi-même de la réalité du fait, car, même après un laps de temps aussi long, on sent encore un nodus à la queue des épididymes. »

Je constatai, en effet, sur les parties indiquées des points durs et comme fibreux.

« Ces sortes d'indurations, ajouta mon vieil ami, causes certaines de stérilité, sont peu connues; mieux étudiées dans leur formation et dans leur marche, elles pourraient devenir le point de départ de nouvelles conquêtes pour la médecine. »

Ce vœu a été en partie exaucé par M. Gosselin, dont je dois ici consigner les intéressantes recherches.

Si M. Gosselin ne peut revendiquer l'honneur d'avoir indiqué le premier, comme cause de stérilité, l'oblitération de l'épididyme, il a pris sur tous ses devanciers un important avantage par la lumière inattendue que, grâce à l'anatomie pathologique et au microscope, il a jetée sur un sujet plongé encore dans les ténèbres.

Malheureusement, les observations de M. Gosselin ne portent que sur les indurations d'une seule espèce, sur celles qui succèdent à l'inflammation vénérienne du testicule. A vrai dire, la spécificité de la phlegmasie ne joue ici aucun rôle; pourtant, il est intéressant de savoir si des inflammations spontanées ou traumatiques sont suivies de résultats parfaitement identiques avec ceux de l'orchite vénérienne.

J'essayerai, par des faits qui me sont propres, de suppléer au silence de M. Gosselin.

Les observations qui servent de base au travail dont je vais parler, se rapportent toutes, on le comprend, à des épididymites bilatérales, car, si un des deux testicules reste intact, il est impossible d'apprécier expérimentalement les modifications survenues dans la fonction séminale, puisque le testicule sain continue à fournir les éléments de la sécrétion, c'est-à-dire les spermatozoïdes.

Les faits de M. Gosselin, consignés dans son travail (1), sont au nombre de vingt et se partagent en deux catégories, selon que les épididymites étaient plus ou moins récentes.

Dans la première catégorie, composée de quinze faits, l'inflammation des épididymes remontait à quelques semaines ou à quelques mois. Tous les malades de cette catégorie se ressemblaient sous les trois rapports suivants : 1° ils conservaient, à l'époque où la guérison leur semblait être complète, une induration, sorte de noyau ou de durillon, au niveau de la queue des épididymes; 2° rien ne leur paraissait changé dans leurs fonctions génitales : désirs, érection, éjaculation, tout était revenu comme avant la maladie; le sperme n'offrait même aucun changement dans sa quantité, sa couleur et son odeur : il conservait toutes les propriétés chimiques que lui a

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(2) Gosselin, *Nouvelles observations sur l'oblitération des voies spermatiques et sur la stérilité consécutive à l'épididymite bilatérale* (*Archives générales de médecine*, 5e série, t. II, septembre 1853).

reconnues Berzelius, ainsi que M. Gosselin s'en est assuré, dans un cas, avec le préparateur de chimie à la Faculté de médecine; 3° enfin, le sperme, examiné au microscope, n'offrait, pendant les premiers temps, aucune apparence de spermatozoïdes.

La seconde catégorie, remplie par cinq observations, se rapporte à des épididymites datant de plusieurs années. Chez quatre de ces individus, dont les épididymes présentaient une induration comme dans les faits précédents, le sperme avait perdu sa propriété fécondante, tout en conservant ses caractères physiques et chimiques; chez le cinquième, l'induration n'a pu être constatée que d'un seul côté, et l'on a trouvé des spermatozoïdes dans la liqueur séminale.

Enfin, ainsi que M. Gosselin l'avait établi dans un précédent mémoire (1), toutes les fois que les épididymites n'ont pas été suivies d'induration, la fonction séminale n'a subi aucun trouble, et des spermatozoïdes ont été vus dans le liquide éjaculé.

C'est donc à l'existence de cette induration, qui forme un obstacle mécanique à la marche du produit testiculaire, qu'il faut rapporter l'absence des animalcules spermatiques.

Cette hypothèse, qui me paraît être l'expression de la vérité, n'est point infirmée par la persistance des autres circonstances physiologiques de la fonction génitale qui semblent, au premier abord, lui donner un démenti. Les désirs vénériens et la puissance virile n'éprouvent aucune diminution, parce que la sécrétion testiculaire continue, quoique le produit de cette sécrétion, au lieu d'être rejeté au dehors par le canal de l'urèthre, rentre dans l'organisme par la résorption; le liquide éjaculé présente les caractères physiques et chimiques qu'il offre à l'état normal, parce que ces caractères sont ceux du produit de la sécrétion des vésicules séminales ; — dans les cas dont il s'agit ici, la liqueur éjaculée est du sperme vésiculaire duquel est complétement absent le sperme testiculaire. — Les considérations physiologiques, placées dans l'introduction de cet ouvrage (1), et relatives au rôle respectif joué dans la fonction séminale par les vésicules et les testicules, permettront au lecteur de se rendre compte des circonstances que j'indique ici, sans qu'il soit nécessaire de m'y arrêter plus longtemps. D'ailleurs, on pourra toujours recourir au travail de M. Gosselin, dont je ne puis, on le comprend, qu'analyser les parties les plus saillantes et les plus appropriées à mon sujet.

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(1) *Comptes rendus des séances de l'Académie des sciences*, séance du 14 juin 1847.

Cependant, au nom même de l'intérêt de ce sujet, qu'on me permette de reproduire les conclusions pathologiques que l'auteur a tirées de ses recherches. Cette citation, tout en abrégeant le discours, rendra ma pensée plus lucide, car je partage sur ce point tous les errements de M. Gosselin.

« Cette oblitération, dit-il, occupe le plus souvent la queue de l'épididyme ; mais elle peut, à la rigueur, se trouver sur un autre point de cet organe. Comme, à partir de son corps, c'est un conduit unique qui se forme en s'enroulant, il suffit que le calibre de ce conduit s'efface en un point pour qu'il y ait obstacle au passage du sperme.

» Elle n'occasionne pas de douleurs ; on voit, il est vrai, des malades qui souffrent longtemps à la suite d'une orchite blennorrhagique ; mais je l'ai attribué, dans quelques-unes de mes observations, à un reste d'inflammation au niveau du noyau, car les douleurs étaient augmentées par la marche et les travaux pénibles, tandis que l'éjaculation n'avait sur elles aucune influence. La pression du point induré les augmentait, tandis que les autres parties de l'épididyme étaient peu sensibles.

» Elle n'entraîne pas de changement appréciable pour les malades dans les fonctions des organes génitaux. Si même on voyait, à la suite d'une orchite, les érections et les éjaculations diminuer, il faudrait craindre une affection tuberculeuse, et explorer, à l'aide du toucher rectal, les vésicules séminales et la prostate.

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(1) Voyez les pages 19 et suiv.

» Quand l'oblitération existe des deux côtés, elle occasionne nécessairement la stérilité; quand elle existe d'un seul côté, la fécondation est possible, à la condition que l'autre testicule soit sain.....

» La durée de l'oblitération est variable. Je suis heureux d'avoir pu démontrer aussi clairement que possible qu'au bout de trois, quatre, cinq et même de huit mois, elle peut disparaître et laisser libre la circulation du sperme. Je n'ai pas de fait qui me prouve que l'oblitération puisse disparaître après un temps plus long, mais il n'y a pas de raison pour regarder la chose comme impossible; je ne voudrais même pas assigner un terme au delà duquel on ne devrait plus compter sur la guérison. Pour obtenir à cet égard des résultats satisfaisants, il faudrait beaucoup plus d'observations que je n'en possède; je compte recueillir avec soin toutes celles que le hasard me permettra de suivre; mais, vu leur rareté et les difficultés inhérentes à ce genre de recherches, il faudra nécessairement un temps assez long. Au point où en est aujourd'hui la question, on peut concevoir cependant que certains individus, après avoir été stériles pendant les premiers mois qui suivent une épididymite double, puissent, au bout d'un certain temps, redevenir aptes à la fécondation (1). »

Les réserves exprimées par M. Gosselin au sujet de la durée des indurations épididymaires ont été confirmées par l'expérience. J'ai vu, pour mon compte, un grand nombre de ces indurations, et j'établis, comme règle absolue, qu'après le sixième mois, l'induration résiste à tout traitement; le malade, si les deux épididymes sont pris, est pour toujours stérile.

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(1) Gosselin, *Nouvelles études sur l'oblitération des voies spermatiques* (*Archives générales de médecine*, septembre 1853).

Cette loi ne souffre aucune exception.

A part cette certitude que m'a donnée une longue expérience, il est impossible de rien reprendre au chapitre que M. Gosselin a ajouté à l'histoire de l'épididymite blennorrhagique; mais au point de vue de ce livre, le cadre est trop restreint, et je dois rechercher si la blennorrhagie est la seule cause d'inflammation épididymaire, capable d'amener l'oblitération de ce conduit, et, par suite, la stérilité.

Hippocrate a noté que les Scythes étaient pour la plupart stériles, et il attribuait leur infirmité à l'habitude qu'ils avaient de monter à cheval. Depuis le père de la médecine, la même observation a été faite bien souvent, et l'on rencontre tous les jours des hommes, cavaliers par état, qui, avec les apparences de la plus énergique virilité, sont inhabiles à la fécondation, surtout s'ils n'ont pas l'habitude de soutenir le scrotum dans un suspensoir. J'ai eu l'occasion d'examiner quelques personnes de cette profession, et j'ai constaté sur plusieurs d'entre elles l'induration caractéristique décrite par M. Gosselin. Les chirurgiens des régiments de cavalerie pourraient sous ce rapport donner à la science des renseignements certains; c'est un intéressant sujet d'études que je leur signale. En attendant des faits confirmatifs plus nombreux, je crois que l'observation d'Hippocrate est vraie, comme à peu près toutes les propositions de ce grand homme, et que l'explication anatomique du phénomène se trouve tout entière dans l'organisation et la transformation fibreuse de la lymphe plastique au niveau de la queue des épididymes, et due à l'inflammation que finissent par amener, dans ces organes, les frottements et les chocs des testicules contre le pommeau de la selle.

En tirant de ce fait sa conséquence la plus logique, il faut admettre qu'il en est de même de toute inflammation à cause franchement traumatique, et, par une nouvelle déduction, on arrive à comprendre dans le même cadre toute inflammation épididymaire, quelle qu'en soit la cause, ainsi que le justifie le fait dont j'ai parlé au début de ce chapitre.

Généralisant donc l'étude de M. Gosselin, on doit reconnaître que toute épididymite double, qu'elle soit vénérienne, traumatique, métastatique, etc., etc., en favorisant le dépôt de la lymphe plastique sur un point de l'épididyme, peut devenir une cause de stérilité soit temporaire, soit définitive : temporaire, si la lymphe plastique qui forme obstacle au passage du sperme testiculaire est résorbée; définitive, si l'induration persiste.

Pour prévenir, autant que possible, ce dernier résultat, le traitement, pendant la période aiguë de l'inflammation, doit tendre surtout à obtenir une résolution rapide. Les émissions sanguines locales, répétées plusieurs fois selon les forces et la constitution du malade, marquent le début du traitement; les purgatifs, donnés tous les trois ou quatre jours, remplacent ensuite les sangsues; l'engorgement est de bonne heure attaqué par les fondants, surtout par le mercure dont l'introduction dans les voies circulatoires, ainsi que le dit M. Gosselin, paraît favorable à la résolution des épanchements plastiques dans le testicule et l'épididyme.

Si, après la disparition de tous les symptômes inflammatoires, l'induration épididymaire persiste, il ne faut point hésiter à recourir à l'iodure de potassium à l'intérieur et à l'extérieur. Sans doute, il est à craindre, ainsi que je l'ai dit plus haut, que l'iode amène l'atrophie des testicules, et que, pour éviter un mal, on tombe dans un pire. Certainement le danger n'est pas à dédaigner, mais on peut jusqu'à un certain point s'en garantir, en apportant à l'administration du médicament une réserve et une attention soutenues.

Est-il besoin de faire remarquer que toutes les considérations que je viens de présenter sur ce mode d'oblitération de l'épididyme, peuvent se rapporter au canal déférent? Sans doute, l'induration qui intercepte la libre circulation dans l'intérieur de ce canal est moins facilement appréciable au toucher que celle dont le siége est à l'épididyme, parce qu'elle est protégée par des parois plus résistantes, et dérobée quelquefois dans les profondeurs de l'abdomen ; mais comme celle de l'épididyme, elle s'accompagne de désirs vénériens normaux, d'éjaculations aussi abondantes qu'à l'état ordinaire, et complétement privées de spermatozoïdes. Sous ces rapports, que l'induration se fixe à l'épididyme ou au canal déférent, les résultats sont parfaitement identiques.

L'inflammation n'est pas la seule source qui fournisse des obstructions au conduit vecteur du sperme testiculaire : les tubercules, le cancer peuvent y déposer leurs produits morbides, ainsi qu'on en a des exemples dans la science, et l'on comprend même qu'il puisse s'y former des dépôts d'autre nature, véritables calculs comme on en observe dans toutes surfaces creuses.

Le diagnostic différentiel de ces divers genres d'obstruction, surtout en dehors de l'épididymite, présente une obscurité sur laquelle peuvent jeter quelque jour les diathèses tuberculeuse et cancéreuse, mais que les antécédents et l'état actuel du malade n'éclairent, dans les autres cas, que d'une lumière douteuse.

La présence, dans le produit de l'éjaculation, de pus, de sang, de matières tuberculeuse, cancéreuse ou autres, n'est point un signe irréfragable, car ces matières peuvent également provenir du canal de l'urèthre, de la prostate, des canaux éjaculateurs ou des vésicules séminales.

Cependant, comme la présence de ces matières morbides dans le sperme n'en éloigne point les spermatozoïdes, ainsi que l'ont constaté les observations des micrographes, on est en droit de conclure que la suppuration, la phlegmasie, la tuberculisation, le cancer, etc., de l'urèthre, de la prostate, des canaux éjaculateurs et des vésicules séminales ne sont point de suffisantes raisons pour expliquer l'absence du sperme testiculaire, et qu'il se peut faire que les matières morbides décelées dans le produit de l'éjaculation, s'étendent jusqu'au canal déférent et même jusqu'à l'épididyme. De cette manière, on arrive à déterminer : 1° par la quantité du liquide éjaculé, qu'aucun obstacle n'existe sur le parcours des voies spermatiques compris entre le méat urinaire et les vésicules séminales ; 2° par l'absence des spermatozoïdes (en supposant qu'il n'y a aucune autre cause de stérilité), qu'un obstacle les empêche d'aller du testicule à la vésicule séminale ; 3° enfin, par la présence d'une matière morbide dans le produit de l'éjaculation, que l'obstacle est probablement dû à la pénétration de cette matière morbide dans le canal déférent et même dans l'épididyme.

Je dois à la vérité de dire que c'est par induction que j'établis ce diagnostic différentiel ; je ne puis l'appuyer sur aucun fait clinique; mais il m'a paru assez logique pour être indiqué ici, afin que des recherches ultérieures et diverses en constatent ou en infirment la réalité.

CHAPITRE II

TROUBLES DE LA FONCTION DE CONSERVATION.

Les vésicules séminales dans lesquelles se passe toute la fonction dont j'ai ici à examiner les troubles, remplissent un double rôle à l'endroit du sperme testiculaire : 1° elles lui offrent un asile en attendant son expulsion ; 2° elles lui préparent les moyens d'exécuter cette expulsion sûrement et fructueusement.

Quand les vésicules séminales refusent au sperme l'asile qu'elles sont destinées à lui procurer, en d'autres termes, quand elles ne peuvent le garder en réserve et qu'elles le laissent échapper en dehors des conditions normales de son expulsion, c'est-à-dire l'excitation vénérienne, il y a ce qu'on appelle *spermatorrhée*, *pertes séminales*, etc.

Je me suis déjà longuement occupé de cette affection, et je dois renvoyer le lecteur au chapitre qui lui est consacré (1).

Sous le second rapport, c'est-à-dire sous celui des vésicules séminales considérées, non plus comme organes de conservation du sperme testiculaire, mais comme organes de sécrétion, on peut dire que les vésicules séminales sont susceptibles d'états morbides les plus variés, depuis la simple inflammation et la suppuration, jusqu'aux diverses dégénérescences.

Civiale, qui a pris soin d'analyser toutes les lésions cadavériques signalées par les auteurs sur les vésicules séminales, termine cet examen par les lignes suivantes qui résument l'état actuel de la science sur cette partie de l'anatomie pathologique : « En résumé, dit-il, les affections principales des vésicules séminales et des conduits spermatiques se rapportent, pour le plus grand nombre, à l'inflammation, soit aiguë, soit surtout chronique, et aux suites qu'elle peut entraîner. Mais la phlegmasie elle-même a été bien moins souvent observée que les altérations de texture qui en procèdent. D'ailleurs, elle n'est jamais bornée, et toujours elle s'accompagne de l'inflammation des parties voisines, telles que le testicule, la vessie, le rectum et principalement la prostate. Elle paraît se terminer assez fréquemment par suppuration et bien plus souvent encore par induration. Le pus, quand il s'est produit, s'échappe tantôt par les voies naturelles, tantôt par des trajets fistuleux, communiquant soit avec la vessie, comme l'a vu M. Andral, soit avec le rectum, comme le dit M. Martin, soit avec l'extérieur du corps, comme le constatent des faits récents et comme je l'ai observé plusieurs fois. Il faut rapprocher de la suppuration, du moins quant à ses produits, la tuberculisation des vésicules séminales, dont parle M. Louis, et qui avait été mentionnée; les faits que je viens de rapporter prouvent en effet que cette terminaison n'est pas rare. A l'induration se rapportent également la cartilaginification et l'ossification, dont, indépendamment des cas précédemment décrits, il s'en trouve plusieurs dans les ouvrages de Sandifort, Sœmmerring et Voigtel. Enfin, les vésicules séminales ont été vues atrophiées par Baillie et Morgagni. Je me borne à mentionner les calculs trouvés dans leur intérieur, dont j'ai parlé dans un autre ouvrage, et dont Carmann, Riedlin, Stalpart van der Wiel, Hartmann, Meckel, Hemmann, Baillie, etc., citent des exemples (1). »

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(1) Voyez la page 326, et l'ouvrage de F. Lallemand, *Des pertes séminales involontaires*. Paris. 1836-1842, 3 vol. in-8.

Cependant la distinction que la physiologie établit entre les attributs des vésicules séminales en les considérant, d'un côté, comme organes de conservation du sperme testiculaire, et, d'autre part, comme organes de sécrétion, entraîne-t-elle une distinction analogue dans l'ordre pathologique? en d'autres termes, les affections des vésicules séminales, en tant qu'organes de conservation, sont-elles si distinctes des affections des mêmes parties, en tant qu'organes de sécrétion, qu'il soit possible de les étudier séparément et d'en former deux classes dans le cadre nosologique?

Je ne le pense pas.

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(1) Civiale, *Traité pratique sur les maladies des organes génito-urinaires*. Paris, 1850, t. II, p. 135.

Peut-on admettre, en effet, que dans un espace aussi étroit que celui que présentent les vésicules séminales, une lésion, quelle qu'elle soit, respecte telle propriété, alors que les autres sont troublées et même anéanties? Voyez ce qui se passe pour la plus simple de ces lésions, la phlegmasie. Elle détermine la spermatorrhée, tout en activant, d'une manière morbide, le travail sécrétoire des vésicules séminales, car comment expliquer, sans cette sursécrétion, la quantité énorme de liquide que perdent les tabescents ?

Cependant, n'exagérons pas ces prémices jusqu'à établir comme une loi que toute affection des vésicules séminales est fatalement suivie de spermatorrhée ; les faits nous donneraient un éclatant démenti : on a trouvé sur le cadavre d'individus dont rien, pendant la vie, ne faisait pressentir une lésion du côté des voies génitales, des vésicules tuberculeuses, cancéreuses, purulentes, etc., etc. ; rien, je le répète, ni douleur, ni pertes séminales, n'avait attiré l'attention du malade de ce côté, et, si la puissance virile avait peut-être perdu quelque chose de son énergie, cet affaiblissement était mis sur le compte de la diathèse générale ou sur celui de quelque affection concomitante.

Il semblerait, d'après ces faits, que les auteurs qui m'ont précédé ont eu raison de regarder comme très-difficile, sinon impossible, un diagnostic exact des maladies des vésicules séminales. Sans doute, avant l'intervention du microscope dans les études médicales, certaines lésions devaient passer inaperçues, ou leurs symptômes se confondre avec ceux d'autres lésions voisines ou éloignées; mais le microscope a jeté, sur le sujet qui nous occupe, une lumière si vive et si éclatante que l'on s'étonne de ne rencontrer les résultats qu'il fournit dans aucune partie de l'ouvrage de Civiale, qui se contente de cette simple note : « Quelques modernes comptent beaucoup sur un nouveau moyen de diagnostic qu'il ne faut pas négliger, mais qui n'a peut-être pas toute la certitude qu'on lui suppose. Il s'agit de la présence des zoospermes, constatée au moyen du microscope dans les fluides expulsés naturellement ou trouvés dans les vésicules séminales et les conduits déférents. Sans vouloir atténuer la portée de ce moyen explorateur, je crois être en droit de faire remarquer que sa mise en œuvre réclame des soins et des précautions qu'on néglige trop souvent, et les divergences d'opinions sur ce sujet n'ont peut-être pas d'autre cause (1). »

La perte inutile et fâcheuse du sperme testiculaire, son mélange avec des matières morbides qui peuvent en altérer les propriétés, et sa déviation du chemin qu'il parcourt d'ordinaire, sont les résultats des lésions dont Civiale vient de nous dérouler le tableau.

J'ai dit ailleurs, l'influence des pertes séminales sur la puissance copulatrice, je ne reviendrai pas ici sur ce sujet.

Mais je dirai que, lorsque la spermatorrhée a quelque intensité, qu'elle dure depuis longtemps, il n'arrive plus de zoospermes dans les vésicules et que, par conséquent, on n'en trouve plus dans le produit des pertes séminales; il est probable que le testicule, pour réparer ses pertes incessantes, devient le siége d'une sursécrétion qui, après plus ou moins longtemps, finit par tarir la source même de la sécrétion, soit en épuisant la force dynamique de la glande, soit en appelant dans ses tissus une irritation morbide.

La disparition des spermatozoïdes, phénomène capital pour nous, peut dans quelques circonstances, être due au mélange du liquide séminal avec les matières morbides, quoique des micrographes, comme M. Donné (2), aient rencontré des spermatozoïdes vivants dans des liquides sanguins, purulents, etc., etc.

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(1) Civiale, *Traité pratique sur les maladies des organes génito-urinaires*, t. II, p. 151.

(2) Donné, *Cours de microscopie*, Paris, 1844, p. 306.

D'autres fois cette absence est due à l'obstruction du canal déférent par des matières morbides analogues à celles qui remplissent les vésicules séminales, car hâtons-nous de le dire, les affections de ces dernières retentissent sur presque toutes les parties de l'appareil génital (1).

En effet, dans le cours des maladies des vésicules, une vive irritabilité se communique d'une part aux testicules dont la sécrétion est augmentée, et d'autre part, au canal de l'urèthre qui devient le siége de rétrécissements spasmodiques qui forcent le sperme à rétrograder vers le réservoir urinaire.

Ces phénomènes, contractions spasmodiques de l'urèthre, et présence, dans les urines, de zoospermes mêlés à des caillots semblables à du blanc d'œufs, sont, pour le chirurgien expérimenté, des signes qui l'amènent à explorer les vésicules séminales, par la palpation abdominale sur les côtés de la vessie, et surtout par le toucher anal, en portant le doigt aussi haut que possible.

On ne doit pas s'étonner de ces sympathies morbides de voisinage, car les vésicules séminales participent elles-mêmes aux altérations de tous les organes voisins : l'atrophie d'un testicule est toujours accompagnée de l'atrophie de la vésicule du même côté ; le sarcocèle tuberculeux indique presque invariablement, comme je l'ai dit plus haut, des tubercules dans les vésicules, etc., du côté du canal de l'urèthre les relations sont peut-être encore plus intimes, et la spermatorrhée, comme l'a démontré Lallemand, est due, dans la majorité des cas, à une phlegmasie dont la cause première est presque toujours dans le canal de l'urèthre.

M. Aug. Mercier dont la compétence en fait de maladies des voies urinaires est si légitimement établie, m'a assuré que l'uréthrite chronique se propage assez souvent jusqu'aux vésicules dont la muqueuse et les tissus sous-jacents se durcissent et opposent ainsi un obstacle à la libre circulation du sperme testiculaire ; réciproquement l'inflammation chronique des vésicules amène, en dehors des troubles que j'ai déjà signalés, une véritable phlegmasie chronique de l'urèthre qui, elle, d'ailleurs ne s'oppose ni à la sortie ni à la direction normale du sperme.

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(1) Voyez la page 581, *Oblitérations du canal déférent.*

Quoi qu'il en soit, les altérations vitales ou organiques des vésicules séminales portent atteinte à la faculté procréatrice de l'homme :

1° En laissant échapper sans profit la liqueur prolifique que les testicules lui envoient ;

2° En épuisant la sécrétion testiculaire ;

3° En altérant la nature du liquide sécrété ;

4° En communiquant ses altérations, vitales ou organiques, aux organes voisins, et en jetant ainsi un trouble général dans l'appareil de la génération.

Les deux premiers modes d'action des maladies des vésicules séminales amènent l'impuissance, comme je l'ai dit ailleurs; les deux derniers portent plus spécialement sur la faculté fécondante, soit en altérant la nature du sperme, soit en mettant des obstacles à sa marche.

La phlegmasie aiguë ou chronique, les dégénérescences, l'irritabilité nerveuse et l'atonie sont les causes les plus ordinaires de l'impuissance et de la stérilité qui se doivent rattacher aux maladies des vésicules séminales.

Entre temps, je dois compléter ici, au point de vue de la stérilité, le chapitre que j'ai consacré à l'impuissance dont la spermatorrhée est la cause.

Quand les pertes séminales tiennent à la phlegmasie aiguë ou chronique des vésicules, on doit recourir au traitement préconisé par Lallemand : antiphlogistiques, balsamiques et, dans quelques cas, cautérisation de la prostate avec le nitrate d'argent. Trousseau, dans ses leçons cliniques, recommandait le calorique appliqué sur les lombes, le périnée, les testicules et la verge. Je me suis trop bien trouvé de ce moyen pour que je ne le conseille pas à mon tour.

Quand la spermatorrhée est nocturne et qu'elle reconnaît pour cause le spasme des vésicules, on recourt encore à la chaleur sèche, et l'on donne, tous les soirs, une pilule de 1 à 5 centigrammes d'extrait de belladone.

Enfin quand l'atonie des vésicules est le point de départ de la spermatorrhée, on a recours aux toniques à l'intérieur, aux bains de mer, aux bains de siége froids et à l'hydrothérapie.

Contre les spasmes et l'atonie des vésicules séminales, Trousseau avait imaginé un petit instrument qui, introduit par l'anus, allait comprimer les vésicules et s'opposait ainsi d'un côté aux spasmes, et de l'autre à la sortie du fluide prolifique; cet appareil qu'il appelait *un bout compresseur*, rend, en effet, de grand services dans les cas où son emploi est indiqué, et j'ai dû le rappeler à cette place.

CHAPITRE III

TROUBLES DE LA FONCTION D'EXCRÉTION.

En quittant les vésicules séminales et avant d'arriver au dehors, le sperme traverse deux nouveaux conduits : les canaux éjaculateurs et le canal de l'urèthre, et n'est lancé, avec une certaine force, qu'à la condition de la rigidité de la verge.

Il me reste donc à étudier les circonstances qui peuvent mettre obstacle à cette nouvelle et dernière phase de la marche du fluide spermatique. Pour que cette étude ait toute la clarté désirable, je la partagerai en trois paragraphes : dans le premier, j'examinerai les affections des conduits éjaculateurs et de la prostate; dans le second, je passerai en revue les accidents si nombreux et si variés dont le canal de l'urèthre est le siége; dans le troisième, enfin, abordant d'une façon plus complète que je ne l'ai fait précédemment, la question de l'éjaculation, j'aurai à me demander si l'impuissance est toujours et fatalement une cause de stérilité.

§ I. — Affections des canaux éjaculateurs et de la prostate.

Pour obéir à la logique que m'imposait en quelque sorte la marche du sperme à travers les nombreux organes qu'il traverse, j'ai dû examiner séparément les affections des vésicules séminales et celles des canaux éjaculateurs et de la prostate. Cette distinction purement physiologique ne saurait subsister dans l'ordre pathologique, et je suis le premier à reconnaître que les canaux éjaculateurs participent toujours plus ou moins aux maladies des vésicules séminales. Aussi les considérations que j'ai présentées à l'occasion de ces dernières, sont-elles entièrement applicables aux conduits éjaculateurs et à la prostate.

Cela est si vrai que, dans les cas de spermatorrhée, par exemple, où le caustique exerce une influence heureuse, cette influence n'est pas due à l'action immédiate de la cautérisation sur les vésicules séminales, puisque le nitrate d'argent ne touche que la prostate et l'ouverture externe des canaux éjaculateurs. C'est donc en modifiant l'état de ceux-ci, que la pierre infernale finit par modifier celui des vésicules séminales.

Cependant, cette liaison morbide n'est pas tellement intime qu'il n'existe des cas où l'un de ces organes est malade, tandis que l'autre est parfaitement sain, ou n'est tout au moins affecté que d'une manière insignifiante. Ainsi, lorsque dans le produit de l'éjaculation on constate de la matière tuberculeuse, cancéreuse, etc., et que, par le toucher rectal et le cathétérisme, on s'est assuré que cette matière ne vient ni de la prostate, ni du canal de l'urèthre, ni de la vessie, il faut bien admettre la libre circulation des canaux éjaculateurs, et en même temps la présence dans les vésicules séminales du produit du tubercule ou du cancer; car, ainsi que je le dirai tout à l'heure, si les canaux éjaculateurs étaient obstrués dans un point de leur parcours, il n'y aurait point d'éjaculation; il n'y aurait qu'un suintement de fluide prostatique, dont la minime quantité suffit toujours, à défaut d'autre caractère, pour le distinguer du produit de la sécrétion vésiculaire.

D'autre part, il est telles affections de la prostate et même des conduits éjaculateurs, auxquelles restent parfaitement étrangères les vésicules séminales, ainsi que l'ont montré des nécropsies dans lesquelles la prostate et les canaux éjaculateurs étaient gorgés de pus, alors que les vésicules séminales étaient dans un parfait état d'intégrité.

Cependant, il faut le reconnaître, ces cas sont très-rares. Quand de si graves désordres ont attaqué un point de l'appareil spermatique, il est commun de les voir se répercuter sur toutes les parties de l'appareil, même sur les points les plus éloignés de leur source, ainsi que l'ont observé Andral, Cruveilhier, Lallemand, Dalmas, Albert, etc., qui ont vu des lésions identiques exister à la fois sur la prostate, les canaux éjaculateurs, les vésicules séminales, les canaux déférents et les testicules.

Quoi qu'il en soit, au point de vue de la stérilité, les affections des conduits éjaculateurs et de la prostate peuvent se partager en deux grandes classes, selon les résultats qu'elles produisent.

Dans la première classe se rangent les lésions anatomiques susceptibles de mettre obstacle à la direction normale du sperme, soit en s'opposant à sa marche, soit en lui faisant prendre une route différente de celle qu'il doit suivre.

La seconde classe comprend les affections qui, laissant complétement libre cette portion de la voie spermatique, altèrent les conditions dynamiques par lesquelles s'accomplit la marche du fluide séminal.

Comme sans doute on le pressent, ces deux genres d'affections ont une symptomatologie tellement différente, qu'il est impossible de les rapprocher et de les confondre. Tandis que dans les secondes, une certaine quantité de liquide spermatique s'écoule au dehors, les premières sont entièrement privées d'éjaculation et ne laissent suinter qu'une simple humidité produite par les glandes qui tapissent le canal de l'urèthre.

Les premières créent à la marche du sperme un empêchement mécanique; les secondes, au contraire, ne lui opposent, qu'on me passe le mot, que des obstacles dynamiques.

Examinons donc séparément chacune de ces deux classes d'affections, où, comme on va le voir, il est nécessaire d'admettre des degrés.

1° *Obstacles mécaniques à la marche normale du sperme.* — Ces obstacles sont tantôt dans les canaux éjaculateurs et tantôt dans la prostate.

Toutes les causes que nous avons vues précédemment susceptibles d'amener l'oblitération des canaux déférents peuvent avoir une action analogue sur les canaux éjaculateurs; l'inflammation, la tuberculisation, le cancer, l'ossification, ainsi que Lallemand l'a observé, le dépôt de concrétions terreuses, comme l'a constaté Mitchell, sont tout autant de causes qui peuvent empêcher le sperme de passer des vésicules séminales dans l'urèthre.

Dans d'autres cas, l'obstacle siége dans la prostate; l'induration de cette glande, ses dégénérescences, son hypertrophie, sa phlegmasie avec ou sans formation de pus, etc., sont également des circonstances capables d'amener, d'une manière ou d'une autre, l'oblitération de la partie des canaux éjaculateurs qui la traverse.

Ces oblitérations, que la cause siége dans les canaux éjaculateurs ou dans la prostate, sont souvent très-difficiles à constater sur le vivant, quand l'oblitération n'a lieu que pour un seul côté des voies spermatiques. Dans ce cas, le côté resté libre fournit assez de fluide pour que la sollicitude du malade ne soit pas éveillée et pour rendre beaucoup moins grave le pronostic au point de vue seulement où nous sommes placé. Sans doute, quand on songe aux circonstances nombreuses qui, eu égard à la délicatesse et à la multiplicité des organes, peuvent empêcher la fonction spermatique, il est toujours sérieux de constater une lésion dans un de ces organes doubles; car, par le fait de cette lésion, le malade perd plus que la moitié de ses chances de fécondité.

Cependant, en tout état de choses, il n'est point stérile; pour qu'il le devienne, dans le cercle où nous sommes à présent enfermé, il faut que l'oblitération se produise à la fois dans les deux canaux éjaculateurs.

Cette simultanéité d'obstruction n'est pas commune; elle a été cependant observée : Lallemand, Ricord, Gaussail, Cullerier, etc., ont rencontré dans ces organes, tantôt de l'encéphaloïde, tantôt du tubercule, tantôt des granulations osseuses et tantôt des matières morbides venues de la prostate.

Dans tous ces cas, l'éjaculation et même le suintement du fluide spermatique sont impossibles. Pas n'est besoin d'examiner au microscope le pus, le liquide rendu pour y chercher les spermatozoïdes ; la quantité de ce liquide, à défaut d'autre caractère physique ou chimique, suffit toujours pour en trahir la source. Cette absence d'éjaculation, ou plutôt de fluide spermatique, est un symptôme capital, qui, rapproché des signes fournis par le toucher rectal et le cathétérisme, peut permettre de fixer la désignation exacte du siége de la maladie.

Il est des circonstances où le fluide spermatique manque complétement, comme dans les cas rapportés plus haut, tant que la verge est en érection, mais s'écoule au dehors en bavant, ou mêlé à l'urine, dès que le pénis revient à la flaccidité. « De la Peyronie (1) parle d'un homme qui avait déjà eu trois enfants, et qui, à la suite d'une gonorrhée dont il négligea le traitement, faisait de vains efforts pour éjaculer le sperme, qui ne sortait qu'en bavant, peu de temps après le coït ; l'urine, cependant, était rendue sans difficulté, ce qui ne permettait pas de supposer un rétrécissement ou tout autre obstacle dans l'urèthre. A l'ouverture du cadavre, on trouva une cicatrice sur l'éminence de la portion du *verumontanum* qui regarde la vessie ; les brides de cette cicatrice avaient changé la direction des vaisseaux éjaculatoires, de manière que leurs ouvertures, au lieu d'être dirigées, comme elles le sont naturellement, vers le bout de la verge, l'étaient dans le sens contraire, c'est-à-dire vers le col de la vessie ; aussi le sperme ne pouvant plus se diriger vers le bout du gland était réfléchi vers le côté droit du col de la vessie (2). »

L'hypertrophie totale ou partielle de la prostate peut aussi changer la direction des conduits éjaculateurs et reproduire l'accident observé par de la Peyronie.

Ce dyspermatisme, pour me servir de l'expression de Pinel, ou cet aspermatisme, pour employer une expression qui me paraît rendre plus fidèlement ce phénomène, n'est pas toujours la conséquence d'une lésion de la prostate; il est tantôt sous la dépendance d'un rétrécissement de l'urèthre, et tantôt sous celle de contractions spasmodiques de ce canal, et même de contractions semblables des conduits éjaculateurs.

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(1) De la Peyronie, *Sur quelques obstacles qui s'opposent à l'éjaculation naturelle de la semence.* (*Mémoires de l'Académie de chirurgie.* Paris, 1743, t. I, p. 427.)

(2) Orfila, *Traité de médecine légale*, 4e édit., t. I, p. 186.

Le diagnostic différentiel de ces diverses affections a la plus haute importance pour le traitement, car toute médication intempestive peut indéfiniment perpétuer l'impossibilité de l'éjaculation.

Le toucher rectal, le cathétérisme et l'écoulement de l'urine sont les bases du diagnostic différentiel de la lésion de la prostate et de celle de l'urèthre. Il est impossible qu'un examen qui tiendra compte des signes fournis par ces trois modes d'investigation ne conduise pas à l'exacte détermination du siége de la maladie.

Mais cette certitude est plus difficile à acquérir quand l'aspermatisme reconnaît pour cause un spasme nerveux. Les signes sont tous alors négatifs. Malheureusement il est certaines lésions de la prostate, telles, par exemple, que l'induration profonde d'un de ses lobes, qui échappent à tous nos moyens d'investigation, et qui, par cela même, peuvent faire croire à un état spasmodique. Dans d'autres circonstances, au contraire, une légère hypertrophie de la prostate peut simuler des désordres fonctionnels dont elle est parfaitement innocente, et qui tiennent bien réellement à un état nerveux de cette partie des voies spermatiques : c'est ce qui, en effet, m'est arrivé bien positivement une fois. Par le toucher rectal, j'avais constaté un développement anormal du lobe moyen de la prostate, et je crus que l'impossibilité dans laquelle se trouvait le malade d'accomplir l'éjaculation n'avait pas d'autre cause que cette hypertrophie partielle de la glande, qu'expliquaient d'ailleurs plusieurs blennorrhagies successives et mal soignées. Convaincu de la bonté de mon diagnostic, j'insistai sur les émissions sanguines locales, et plus je recourais à ce moyen thérapeutique et plus il semblait au malade que son affection s'aggravait. Le malade se fatigua de l'inutilité de mes soins et alla consulter un confrère, qui, mieux inspiré que moi, et profitant probablement aussi de l'expérience fournie par mon traitement, ordonna les bains, les onctions opiacées et belladonées, les antispasmodiques et le camphre à l'intérieur. Sous l'influence de cette médication, le malade recouvra l'exercice normal de ses facultés génératrices, et je pus constater l'erreur que j'avais commise, en retrouvant intacte l'hypertrophie de la prostate.

Que ce fait, dont les analogues se rencontrent tous les jours dans la pratique et que, par un sentiment mal placé d'amour propre, leurs auteurs mettent grand soin à cacher, que ce fait soit une leçon profitable pour le jeune médecin; car rien n'est aussi difficile que le diagnostic différentiel des maladies de l'appareil génital.

Mais revenons, pour les résumer, aux lésions des canaux éjaculateurs et de la prostate, qui mettent obstacle à la marche naturelle du sperme.

Ces maladies, qui forment la première classe des affections de ces organes, considérées au point de vue de la stérilité, doivent se subdiviser en deux ordres : 1° celles qui créent un obstacle permanent à la marche du sperme, et qui sont caractérisées par l'oblitération de cette partie des voies spermatiques, quelle que soit la cause de l'oblitération; 2° celles qui ne font que détourner le sperme de sa route naturelle et qui ne s'opposent à sa sortie que dans l'état d'érection de la verge.

Ainsi que je l'ai déjà dit, l'aspermatisme, qui est lié aux affections du premier ordre, réclame une médication variable selon la nature de ces affections. Je ne reviendrai pas sur ce point qui m'a longuement occupé.

L'aspermatisme, caractérisé par l'impossibilité de l'éjaculation pendant l'érection du pénis et par la sortie de la liqueur séminale lorsque la verge reprend sa flaccidité, est la conséquence, sans parler encore des états morbides du canal de l'urèthre, tantôt d'une lésion anatomique de la prostate, et tantôt d'un état spasmodique des canaux éjaculateurs, auquel participent souvent la prostate et le col de la vessie.

Dans le premier cas, lorsqu'il est possible de constater la nature de la lésion prostatique, le traitement de l'aspermatisme se confond entièrement avec celui de la lésion de la glande, puisque c'est cette lésion elle-même qui produit l'impossibilité de l'éjaculation. Je n'ai point à faire ici l'histoire de ces diverses lésions, et je ne puis que renvoyer le lecteur aux traités généraux ou spéciaux de pathologie.

L'état nerveux des canaux éjaculateurs, de la prostate et du col vésical qui, en se contractant spasmodiquement sous l'excitation vénérienne, empêchent l'éjaculation de se produire, rentre dans la seconde classe des maladies de ces organes; ces affections, en laissant complétement libre cette portion des voies spermatiques, n'altèrent que les conditions dynamiques au milieu desquelles s'accomplit la marche du fluide séminal; c'est cette seconde catégorie que je vais maintenant examiner, et qui ne crée à la marche du sperme, comme je viens de le dire, que des obstacles dynamiques.

2° *Obstacles dynamiques à la marche du sperme.* — L'éjaculation spermatique exige, pour son accomplissement, l'action réunie de plusieurs organes; il lui faut les contractions des canaux éjaculateurs, des vésicules séminales, des canaux déférents, et probablement aussi celles de l'épididyme, contractions multiples, comme on voit, auxquelles on doit encore ajouter celles des muscles du périnée et celles du muscle de Wilson, qui entoure de toutes parts la portion membraneuse de l'urèthre.

Les considérations que je vais présenter dans cet alinéa devront donc s'appliquer à toutes les portions des voies spermatiques que je viens de nommer, car, pour la facilité du discours et afin de prévenir des répétitions incessantes, j'ai dû réunir dans un seul cadre toutes les conditions dynamiques de l'éjaculation.

Ces conditions ont un type normal, en deçà et au delà duquel il y a trouble et désordre.

En deçà de ce type, on rencontre l'inertie et ses dégradations.

Au delà de ce type, on trouve l'état spasmodique dont je parlais tout à l'heure.

Nous avons donc ici deux classes bien distinctes d'affections caractérisées : la première, par la faiblesse et même par l'absence de contractions ; la seconde, au contraire, par une énergie morbide de ces mêmes contractions.

Dans le premier cas, le sperme testiculaire n'arrive plus aux vésicules séminales, parce que la *vis a tergo* est incapable d'exécuter par elle seule l'ascension du fluide dans les canaux déférents ; il se résorbe sur place ou dans l'épididyme, et il se comporte exactement comme si un obstacle mécanique l'empêchait de circuler dans cette première portion de son parcours ; d'un autre côté, les vésicules séminales continuant à accomplir la fonction sécrétoire qui leur est dévolue et ne pouvant retenir le liquide ainsi produit, celui-ci s'écoule au fur et à mesure qu'il est formé, ou est chassé par le moindre effort qui presse sur les vésicules séminales. On a alors affaire à une véritable spermatorrhée, à cette variété des pertes séminales qui, ainsi que je l'ai dit ailleurs, cède à l'emploi des toniques ou des excitants, comme le seigle ergoté, la noix vomique, à l'embout compresseur de Trousseau, etc.

Dans le second cas, au contraire, lorsque la contractilité a dépassé le type normal, le resserrement spasmodique des conduits, juxtaposant leurs parois internes, efface complétement leur cavité et empêche ainsi le liquide séminal de circuler dans les voies qu'il doit parcourir, pour aller du testicule au méat urinaire. On peut donc avoir, selon le degré d'excitabilité, un aspermatisme incomplet ou complet; incomplet, si le sperme est parvenu jusque dans les canaux éjaculateurs ou l'urèthre, et s'il s'écoule en bavant lorsqu'a cessé la contraction spasmodique qui le retenait; complet, lorsque la liqueur séminale ne se montre ni pendant ni après l'érection, ainsi qu'il arrive dans les cas d'obstruction ou d'oblitération des canaux éjaculateurs.

Comme on le voit, les désordres dus aux troubles de la contractilité des voies spermatiques donnent naissance à deux ordres d'affections, aussi entièrement opposées sous le rapport de la symptomatologie que sous celui du traitement. Elle n'ont de commun que l'inaptitude à la fécondation dont elles frappent le malheureux qui en est atteint.

Le pronostic, au point de vue de la fécondité, est plus grave dans l'affection qui revêt la forme spermatorrhéique que dans celle qui est caractérisée par l'aspermatisme, parce que la perte incessante du sperme, même vésiculaire, est elle-même une cause d'affaiblissement général qui perpétue et aggrave l'inertie des voies spermatiques.

C'est dans ces cas que les analeptiques, les fortifiants, les toniques à l'intérieur et à l'extérieur, les bains froids de rivière, les bains de mer, l'hydrothérapie, les eaux ferrugineuses, l'habitation à la campagne, etc., sont formellement indiqués. La masturbation et les excès du coït étant souvent la cause de cet affaiblissement de la contractilité, on s'explique les succès que, dans ces circonstances, Tissot et d'autres médecins ont obtenus de l'emploi des eaux de Spa, de Passy, de Forges, etc., etc.

Dans les cas, au contraire, de surexcitation de cette contractilité, les calmants et les antispasmodiques sont administrès sous toutes les formes. Les bains chauds prolongés pendant une heure sont des moyens dont on retire presque toujours des avantages marqués. Les opiacés et la belladone surtout occupent dans cette médication une place que légitiment de uombreux succès, si on les associe aux antispasmodiques, parmi lesquels je place au premier rang la valériane, l'asa fœtida, le castoreum et le musc. Le camphre, par son action sédative, est appelé à rendre de très-grands services, surtout s'il y a tendance au priapisme (1).

§ II. — Affections du canal de l'urèthre.

L'urèthre est le dernier canal que le sperme traverse pour arriver au dehors ; comme les autres conduits que j'ai examinés, ce dernier tronçon, qu'on me permette l'expression, peut être obstrué plus ou moins complétement et par suite ralentir la marche du fluide séminal et même s'opposer entièrement à son passage.

De plus, par sa position au milieu des corps caverneux, le canal de l'urèthre déterminant la direction du jet spermatique, que j'ai dit être une condition de l'acte fécondant chez l'homme, il advient nécessairement que les changements anatomiques, survenant dans le canal de l'urèthre, doivent profondément altérer l'axe suivant lequel s'opère l'éjaculation.

En conséquence, eu égard à sa double fonction physiologique, l'urèthre présente deux ordres d'affections :

Le premier ordre contient celles de ces affections qui portent sur la capacité du canal, c'est-à-dire qui mettent obstacle soit à la vitesse, soit à la sortie du sperme, en rétrécissant ou en oblitérant le conduit.

Le second ordre comprend celles de ces affections qui, tout en permettant la sortie du sperme avec la vitesse imprimée par les vésicules séminales et les conduits éjaculateurs, modifient la direction suivant laquelle le fluide séminal doit arriver dans les organes sexuels de la femme.

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(1) Voyez les pages 339 et 589, où il est question du traitement des maladies des vésicules séminales. (*Spermatorrhée*.)

C'est sous ce double aspect que je vais examiner les affections de l'urèthre qui rentrent dans notre sujet.

1° AFFECTIONS DE L'URÈTHRE FAISANT OBSTACLE A LA SORTIE DU SPERME. — Les obstacles par lesquels le sperme peut être arrêté dans sa marche à travers le canal de l'urèthre, et empêché d'arriver dans les organes génitaux de la femme, siégent tantôt dans l'urèthre même, tantôt dans le voisinage de ce conduit, et tantôt dans le fourreau de la verge, dont le prolongement en avant sous le nom de prépuce constitue, pour ainsi dire, le vestibule de ce canal.

Les obstacles qui siégent dans l'urèthre même sont, ainsi que je l'ai précédemment indiqué, ou dynamiques ou mécaniques.

A. *Névralgies et spasmes de l'urèthre.* — Ces affections sont assez rares. Sans doute on rencontre assez souvent des névralgies de l'urèthre, localisées surtout à la fosse naviculaire ou au méat, mais ces névralgies ne déterminent presque jamais des spasmes capables de s'opposer à la sortie du sperme. Je n'en connais pas d'exemple et n'en ai pas moi-même observé. Bien plus, les douleurs que ces névralgies déterminent sont rarement assez intenses pour empêcher le coït : j'ai soigné un jeune Allemand, atteint de cette affection, qui accomplissait l'acte copulateur pendant l'accès même de sa névralgie.

Quant aux spasmes de l'urèthre, tous les chirurgiens ne sont pas d'accord sur leur réalité, du moins dans certaines parties du canal ; personne ne conteste que la région membraneuse ne soit, en effet, contractile ; mais des divergences se manifestent quand il s'agit de la contractilité de la région spongieuse.

Cependant, sans parler des exemples de spasmes morbides dans cette région, rapportés par Bégin, Civiale, Amussat et Reybard, il est incontestable que cette partie du canal aide à l'expulsion de l'urine, et que, dans le cathétérisme, la sonde est tantôt arrêtée en ce point par la contraction des parois uréthrales qui forment alors une véritable obstruction; que tantôt elle est repoussée au dehors par la même cause; et que quelquefois, ainsi que le remarque Reybard, elle est entraînée dans la vessie, comme si elle était attirée par une sorte d'aspiration (1).

Il n'y a pas de doute que c'est dans la région membraneuse que les spasmes de l'urèthre se rencontrent le plus ordinairement; mais leur moindre fréquence dans la région spongieuse ne doit pas faire conclure à leur impossibilité. Pour moi, je ne puis ne pas les admettre dans l'une et l'autre de ces deux régions.

Mais ces spasmes, sur la réalité desquels le cathétérisme ne permet aucun doute, peuvent-ils se montrer en dehors de l'excitation causée par la présence d'un corps étranger dans l'urèthre? en d'autres termes, ces spasmes peuvent-ils se produire d'une manière spontanée?

La sensibilité et la contractilité dont ce canal est doué suffiraient pour répondre *à priori* par l'affirmative, si des faits cliniques ne consacraient pas l'existence de ces affections spasmodiques.

De plus, comme toutes les maladies nerveuses, la névralgie et le spasme de l'urèthre offrent assez souvent le caractère intermittent et périodique : ils cessent brusquement, reviennent, augmentent d'intensité qui est suivie d'une diminution nouvelle. Les crises n'ont rien de fixe dans leur fréquence ni dans leur durée; quotidiennes chez les uns, elles n'apparaissent, chez d'autres que toutes les semaines, que tous les mois; en thèse générale, elles sont d'autant plus rapprochées que la maladie est plus ancienne; quelquefois elles sont précédées par un malaise général, par un état de souffrance vague qui trompe rarement le malade qui le ressent.

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(1) Reybard, *Traité pratique des rétrécissements du canal de l'urètre*, Paris, 1853, p. 33.

Il n'est pas toujours aussi facile qu'on le pense d'établir le diagnostic de la névralgie de l'urèthre; on n'y arrive souvent que par la méthode d'exclusion, en passant en revue les affections spasmodiques de la prostate et de la vessie dont les symptômes se rapprochent de ceux de la névralgie uréthrale.

Pour ce point de vue, que je ne puis aborder sans trop sortir de mon cadre, je renvoie le lecteur à l'ouvrage si souvent cité de Civiale qui, de tous ceux qui ont écrit sur la matière, s'est le plus occupé des spasmes et des névralgies de l'urèthre.

Cependant je ne quitterai pas ce sujet sans dire un mot du traitement qui me paraît le plus convenable. A côté des stupéfiants, des antispasmodiques et des sédatifs dont l'usage est indiqué comme dans toutes les affections nerveuses, on arrive souvent à émousser la sensibilité du canal, en introduisant tous les jours dans l'urèthre une sonde ou une bougie qu'on laisse à demeure pendant dix minutes; à ces moyens on peut associer ou faire succéder les injections d'eau froide dans la vessie; les lavements froids; les douches froides sur le périnée et l'hypogastre et enfin les bains de siége froids à eau courante.

Comme on le voit, la médecine n'est pas désarmée devant une affection qui, il faut le reconnaître aussi, se joue trop souvent des efforts les plus soutenus et des soins les plus méthodiques.

B. *Corps étrangers de l'urèthre.* — Les obstacles mécaniques siégeant dans l'urèthre lui-même sont bien plus communs que les lésions de la vitalité dont je viens de parler.

Ces obstacles doivent être divisés en deux ordres, selon qu'ils ont été amenés dans le canal ou qu'ils se sont formés sur place.

Dans le premier ordre se rangent tous les corps étrangers introduits dans l'urèthre; dans le second, se trouvent les affections connues sous le nom générique de rétrécissement.

Les corps étrangers introduits dans l'urèthre viennent tantôt de l'extérieur et tantôt de la vessie.

La nature des premiers est excessivement variable : on trouve dans la science des faits que l'on reléguerait volontiers dans le domaine de l'imagination, s'ils n'étaient attestés par des témoins honnêtes et dignes de foi.

Cependant ce sont assez généralement des épingles ou des fragments de sondes qui se sont brisés pendant le cathétérisme ; mais quel que soit l'objet arrêté dans l'urèthre, nous n'avons pas, à notre point de vue, à attacher une plus longue attention à ces circonstances, parce que les corps étrangers engagés dans l'urèthre n'y séjournent jamais assez longtemps pour compromettre l'acte copulateur, soit que le canal lui-même ait *avalé* l'obstacle, comme disait Gerdy, soit qu'un chirurgien l'en ait débarrassé pour livrer passage à l'urine.

Mais il me faut signaler un écueil contre lequel il importe de prémunir le malade, c'est la sensation de la persistance que laisse après elle l'extraction de tout corps étranger ; cette illusion est plus marquée pour le canal de l'urèthre que pour l'œil, les voies aériennes ou digestives, etc., si bien que cette sensation fausse, en jetant le trouble dans le moral du malade, peut empêcher l'érection soit par des souffrances imaginaires, soit par la crainte d'une rétention du sperme, soit par la peur même de ne pas obtenir l'érection.

C'est le seul point qui nous intéresse dans l'histoire des corps étrangers introduits dans l'urèthre; le médecin sait d'avance la conduite qu'il doit suivre en de pareilles circonstances, c'est-à-dire rassurer le malade et combattre son erreur.

Les corps étrangers de l'urèthre venant de la vessie sont presque toujours de petits calculs, expulsés naturellement ou sortis à la suite de l'opération de la lithotritie. Je dis presque toujours, parce qu'il peut arriver, comme cela s'est vu en effet, qu'un corps étranger introduit dans la vessie, après y avoir séjourné pendant quelque temps, finisse par être entraîné par l'urine et s'arrête dans l'urèthre, retenu dans ce canal soit par un repli de la muqueuse, soit par toute autre cause.

Cependant de véritables calculs se forment dans l'urèthre lui-même par le dépôt sédimentaire que l'urine laisse après elle; ces calculs, dont l'histoire varie selon le point du canal qui en est le siége, constituent quelquefois de simples infirmités sans influence sur l'acte de la génération, mais le plus souvent déterminent des accidents inflammatoires qui forcent la chirurgie à intervenir promptement pour sauver les jours du malade.

Je n'ai pas à m'occuper de ces derniers, qui échappent à mon sujet par la rapidité même de la solution qu'ils réclament.

Sous le rapport des premiers, bien que leur influence sur les actes copulateur et fécondant ne soit pas directe, puisqu'on cite des faits assez nombreux de pères portant des pierres uréthrales, les accidents qui accompagnent fréquemment l'existence de ces concrétions peuvent ne pas être sans influence sur l'acte de la reproduction.

Ces accidents sont de diverses natures : tantôt le canal se dilate, se partage en une ou en plusieurs poches et présente comme une forme goudronnée; on conçoit que dans de pareilles conditions la marche du sperme puisse être retardée et même modifiée; tantôt l'urèthre, au lieu de se dilater sous l'action de la pierre, s'éraille, et alors les lames du tissu cellulaire sous-jacent, rendues imperméables par l'inflammation chronique, se confondent et ne cèdent devant l'urine que par un élargissement progressif; on comprend combien le sperme à son tour doit être, par cette circonstance, empêché dans sa marche; tantôt, enfin, une véritable infiltration urinaire se produit dans le scrotum, et cette poche, grâce aux sédiments qui s'y déposent incessamment, offre l'aspect d'une pétrification au milieu de laquelle les fonctions testiculaires et partant procréatrices sont singulièrement compromises.

Je ne m'arrêterai pas aux autres accidents produits par la présence d'un ou de plusieurs calculs dans l'urèthre, comme les fistules urinaires par exemple, parce qu'ils n'exercent aucune influence sur les deux actes qui font le sujet de nos études, la copulation et la fécondation.

C. *Rétrécissements de l'urèthre.* — De tous les obstacles à la marche du sperme à travers l'urèthre il n'en est pas de plus fréquents que ceux qui se forment sur place et que l'on connaît sous le nom de *rétrécissements.*

Je n'ai point ici à faire l'histoire de ces affections dont les détails suffiraient pour remplir le cadre que je me suis imposé; mais je dois seulement rechercher leur influence sur l'appareil génital, tant au point de vue des lésions qu'à celui des troubles fonctionnels que les rétrécissements uréthraux déterminent.

J'ai tout à l'heure appelé l'attention du lecteur sur les rétrécissements spasmodiques; je n'y reviendrai pas ici; tout ce qui va suivre se rapporte aux rétrécissements dits *organiques,* quelles qu'en soient les causes.

De ces causes je n'ai à discuter ni la nature, ni la fréquence, ni la légitimité, qu'elles soient traumatiques, simplement inflammatoires, spécifiques ou spéciales, c'est-à-dire pour ces deux derniers termes, blennorrhagiques ou produites par des cautérisations thérapeutiques.

Pour moi tout le problème se réduit en ces termes : un rétrécissement uréthral étant donné, quelle est son influence sur la fonction génératrice.

Déjà, dans la partie de cet ouvrage consacrée à l'étude de l'impuissance chez l'homme, j'ai montré les difficultés que créent à l'érection du pénis les rétrécissements de l'urèthre (1), je n'y reviendrai pas ici; en cette place je ne m'occuperai que des obstacles que les rétrécissements de l'urèthre opposent à la marche saccadée du sperme.

Ces obstacles sont faciles à comprendre quand on ne considère les rétrécissements qu'en eux-mêmes : en effet, le diamètre de l'urèthre, diminué par l'existence même de la coarctetion, l'est encore davantage pendant l'érection, à ce point que le sperme, tantôt simplement ralenti dans sa marche, coule cependant encore pendant le coït; et tantôt, complétement arrêté, il s'amasse derrière le rétrécissement qu'il franchit, en bavant, après la chute de l'érection, ou rebrousse chemin vers la vessie et sort plus tard mêlé à l'urine.

Dans d'autres circonstances, le pénis tout entier participe aux désordres produits par le rétrécissement; sans parler des indurations du gland et du prépuce qui affectent plus spécialement l'acte copulateur, nous assistons à l'atrophie des corps caverneux qui impose à la verge, et par suite au canal de l'urèthre, des incurvations incompatibles avec la marche régulière du sperme; cette atrophie, selon qu'elle est partielle ou générale, donne au pénis les formes les plus étranges, sans parler de la douleur qu'amène l'érection, quand celle-ci est encore possible.

Dans d'autres circonstances, principalement chez les hommes d'un certain âge, l'atrophie des corps caverneux s'accompagne d'un développement et d'une consistance énorme du gland, et alors la verge a complétement l'aspect d'un battant de cloche.

Enfin l'atrophie partielle des corps caverneux se complique assez souvent d'indurations plus ou moins étendues qui concourent aussi à déformer la verge.

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(1) Voyez les pages 257 et suiv.

Cette déformation de l'urèthre et du pénis, due aux coarctations uréthrales, se montre également après l'uréthrotomie, c'est-à-dire précisément après l'opération qui a pour but de détruire ces coarctations : « Quelques opérés, dit Civiale, conservent après le traitement par les grandes incisions, une rigidité de l'urèthre qui détermine une courbure de la verge plus ou moins prononcée, lorsqu'elle entre en érection, et quelquefois même rend l'érection incomplète par l'effet de la douleur. »

Cet état, puisque l'urèthre laisse alors passer les sondes du plus fort calibre, montre que le canal n'a pas recouvré la souplesse et l'élasticité qui lui sont propres, et dans ce cas il faut, afin de les lui rendre, tenter la division plus profonde de la partie altérée de l'urèthre.

La cautérisation par le nitrate d'argent, pratiquée avec le porte-caustique ou par des injections, a été accusée non-seulement des mêmes méfaits que l'uréthrotomie, mais encore d'être la cause la plus fréquente des rétrécissements uréthraux, et, par conséquent, d'être le point de départ de tous les désordres qu'entraînent, dans la fonction génératrice, les coarctations de l'urèthre ainsi que leur traitement.

Sans partager toutes les craintes qu'ont fait naître dans quelques esprits les injections caustiques et la méthode préconisée par Lallemand, je crois qu'il faut apporter une certaine circonspection dans l'emploi de cette méthode, et n'y recourir que dans les cas rares où une cautérisation profonde est absolument nécessaire.

Quant aux injections au nitrate d'argent, à dose modérée, il les faut, je crois, moins redouter comme causes de rétrécissements, que la fréquence et surtout la longue durée des blennorrhagies ; cependant j'ai toujours redouté les injections dites abortives, et je me suis toujours défendu de les prescrire, en dehors de certains cas de convenances sociales plutôt que de médecine.

Quoi qu'il en soit, l'art n'est pas toujours désarmé devant l'obstacle apporté à la marche saccadée du sperme, soit par des coarctations uréthrales, soit par les moyens mis en œuvre pour les guérir.

J'ai indiqué les ressources que nous possédons et dont on trouvera de plus amples détails dans les ouvrages consacrés aux maladies des organes urinaires; je n'insisterai donc pas davantage sur ce point.

Cependant, avant de terminer ce paragraphe consacré aux rétrécissements organiques de l'urèthre, je crois devoir signaler ce que j'appelle volontiers les rétrécissements *mécaniques*, dont la cause est une tumeur située sur le trajet ou dans le voisinage de l'urèthre. « Il est des nodosités, dit Vidal (de Cassis), qui se forment dans les corps caverneux et qui rétrécissent plus ou moins l'urèthre, sans que ce canal soit directement affecté (1). »

D. *Phimosis.* — Enfin et pour compléter l'énumération de tous les obstacles qui s'opposent à la sortie normale du sperme, il me faut mentionner la longueur et l'étroitesse du prépuce.

Le phimosis peut être, plus qu'on ne pense, une cause de stérilité.

Lorsque l'ouverture du prépuce est assez étroite pour ne pas permettre le passage du gland, il est rare que le méat urinaire, surtout pendant l'érection, se trouve en regard de cette ouverture; le jet spermatique vient alors se briser contre la muqueuse préputiale et se répand, sans profit, entre cette dernière et le gland, jusqu'à ce que la flaccidité de la verge lui permette de s'écouler en bavant ou goutte à goutte.

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(1) Vidal (de Cassis). *Traité de pathologie externe*, 4ᵉ éd. Paris, 1855, t. IV, p. 541.

On peut se rendre compte, en faisant uriner le malade, de l'obstacle que le phimosis apporte à la force et à la direction du jet spermatique.

Heureusement cette cause d'infécondité est facile à détruire; il n'y a qu'à faire la circoncision; quelquefois même un simple débridement suffit, quand il n'existe pas, avec l'étroitesse de son ouverture, une longueur exagérée du prépuce.

En résumé, les circonstances qui peuvent empêcher la liqueur séminale de circuler dans l'urèthre ou d'en sortir, sont de cinq sortes :

1° Les lésions vitales de l'urèthre, surtout de sa contractilité;

2° La présence d'un corps étranger dans l'intérieur du canal;

3° Le rétrécissement et même l'oblitération complète du canal par un état morbide de la muqueuse uréthrale ou des tissus sous-jacents.

4° La pression exercée par une tumeur voisine sur les parois du conduit qu'elle rapproche.

5° Enfin le phimosis qui, par la longueur et l'étroitesse du prépuce, arrête ou dévie le jet spermatique.

Dans toutes ces circonstances, le pronostic ne saurait être le même, et je ne parle ici que du pronostic au point de vue de la fonction procréatrice; en effet, un spasme de l'urèthre qui peut n'être que le résultat d'une trop violente ardeur amoureuse, d'une trop vive excitation vénérienne, et dont le repos et quelques bains font justice, ne doit point être comparé à un rétrécissement de l'urèthre dont la cause est quelquefois une profonde altération des tissus, et qui réclame des soins minutieux et prolongés.

Rien ne rattache ces divers états les uns aux autres, car si les spasmes uréthraux, par exemple, se montrent fréquemment sous l'influence d'un corps étranger introduit dans le canal, ils sont parfois essentiels et échappent à toute explication pathologique ou sympathique. Ces divers états n'ont qu'un caractère commun pour nous : celui de produire la stérilité qui n'exige, dans aucun cas, un traitement indépendant de l'affection qu'elle accompagne.

Je n'ai donc pas à m'en occuper ici davantage.

2° États de l'urèthre faisant obstacle a la direction normale du sperme. — Dans le cercle qu'il me reste à parcourir, viennent se placer les altérations de l'urèthre capables, non de ralentir ou d'arrêter le sperme dans sa course, mais de le dévier de l'axe suivant lequel il doit arriver dans les organes génitaux de la femme.

Cet axe n'est autre que celui du méat urinaire, situé au sommet du gland, de manière à partager celui-ci en deux lobes latéraux semblables.

Donc, toutes les fois que le méat urinaire n'occupe pas cette position, la direction du jet spermatique n'est plus normale, et alors il s'agit de savoir si, dans les cas de ce genre, la fécondation est encore possible.

Mais avant d'aborder cette question intéressante, il me faut indiquer, en peu de mots, les divers points sur lesquels peut s'ouvrir l'urèthre.

Je parlerai d'abord des vices de conformation, et dirai ensuite les états morbides qui peuvent amener des accidents analogues.

A. *Anomalies de l'urèthre.* — Ces vices de conformation se peuvent ranger, pour les besoins de ma cause, sous quatre chefs principaux : 1° absence de l'urèthre; 2° oblitération partielle du canal; 3° multiplicité des méats urinaires; 4° déviation de l'urèthre.

Les états morbides, au contraire, ne renferment que deux classes : 1° absence de l'urèthre par suite de la disparition de la verge; 2° perte de substance dans les parois de l'urèthre, c'est-à-dire fistule uréthrale, avec ou sans oblitération partielle du canal.

1° *Absence congénitale de l'urèthre.* — Ce vice de conformation se rencontre plutôt chez la femme que chez l'homme ; cependant ce dernier en a offert des exemples. Dans ces cas l'urine s'écoule par l'anus ou dans les environs, soit que les uretères débouchent directement dans le rectum ou au périnée, soit qu'il y ait une vessie et un commencement d'urèthre.

Dans le chapitre consacré aux vices de conformation de la verge, j'ai rapporté l'observation d'un nouveau-né dont le pénis était absent et dont les urines s'écoulaient par le rectum (1). Je dois maintenant raconter un de ces rares faits observé chez l'adulte, et montrer que cette anomalie qui rend la copulation et par suite la fécondation impossibles, s'accompagne cependant des attributs attachés à l'existence de l'organe essentiel de la génération, c'est-à-dire développement de la barbe, gravité de la voix, étroitesse du bassin, désirs vénériens et recherche de la société des femmes.

Le fait a été rapporté, dans tous ses détails, par Goschler qui n'en a pas trouvé d'analogue dans les recueils et les ouvrages allemands.

Dans sa remarquable thèse de concours (2) M. F. Guyon en donne un extrait que je vais reproduire :

« Patt, âgé de vingt-sept ans, homme d'une force peu commune, grand, fort; bien constitué, sauf les organes génitaux; barbe blonde et très-abondante, pénil couvert de poils touffus, scrotum régulièrement conformé, avec un raphé. La verge manque complétement; Patt est né avec cette imperfection. Dans un examen minutieux, il n'y a pas moyen de trouver la moindre trace de pénis à l'endroit dont il s'agit. Le testicule droit et le cordon sont normaux; à gauche, on constate une orchite aiguë pour laquelle le docteur Goschler a dû être consulté. Sur la paroi antérieure du rectum, à une hauteur de quatre lignes, se trouve sur la ligne médiane une ouverture arrondie donnant issue à l'urine. En avant de l'orifice anal, on remarque une partie cutanée, ridée, de forme triangulaire, se trouvant sur le raphé. Semblable à une crête de coq, d'abord étroite, cette saillie mesure un pouce et demi de long et trois quarts de pouce de large, et se termine à la partie antérieure de l'anus. Elle est pourvue à son angle inférieur d'un appendice verruqueux d'une ligne d'épaisseur, et consistant vraisemblablement en du tissu érectile, car il se gonfle toutes les fois qu'il y a des excitations génitales, auxquelles Patt est très-sujet. L'érection dure plusieurs minutes, elle est suivie ordinairement de la sortie du sperme par l'ouverture du canal de l'urèthre, et cette ouverture se trouve dans le rectum. Étant plus jeune, Patt a remarqué, lorsqu'il montait à cheval sans selle, que l'épine dorsale de l'animal produisait l'excitation de sa tumeur érectile, amenait un gonflement de celle-ci et en même temps des désirs vénériens. Depuis ce temps il se sert, pour arriver au même but, d'un bâton, du dossier d'une chaise ou de tout autre corps analogue. »

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(1) Voyez la page 91.

(2) F. Guyon, *Des vices de conformation du canal de l'urèthre chez l'homme et des moyens d'y remédier*, thèse de concours. Paris, 1863, p. 45, 46.

L'observation de Patt a quelque analogie avec celle que rapporte Pinel (1), et dans laquelle la partie inférieure du canal était intacte ainsi que le verumontanum, ce qui permit de sonder les conduits éjaculateurs et de constater la présence des conduits prostatiques.

Enfin et pour terminer, avec un aimable philosophe, ce chapitre où l'art n'a rien à faire, je rappellerai cette observation de Montaigne : « Je viens de veoir un pastre en Medoc, de trente ans ou environ, qui n'a aulcune monstre des parties génitales : il a trois trous par où il rend son eau incessamment; il est barbu, a désir, et recherche l'attouchement des femmes (1). »

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(1) Pinel, *Mémoires de la Société médicale d'émulation*, t. IV.

2° *Oblitération partielle de l'urèthre : hypospadias et épispadias.* — L'urèthre peut être oblitéré dans une portion plus ou moins étendue de son parcours, et alors les liquides qui traversent la partie restée libre, s'écoulent par une ouverture plus ou moins rapprochée des bourses, selon l'étendue de la portion oblitérée.

Cette ouverture s'ouvre tantôt à la face inférieure et tantôt à la face supérieure de la verge. Le premier cas constitue l'hypospadias, et le second l'épispadias.

Cette ouverture anormale existe quelquefois avec la perméabilité complète de tout l'urèthre, de sorte que celui-ci présente alors deux ouvertures, dont la première est située sur un point quelconque de la verge, et dont la seconde occupe sa place ordinaire au sommet du gland.

Dans d'autres circonstances, l'oblitération de l'urèthre ne commence que sur un point assez éloigné de l'ouverture anormale, de telle manière qu'une partie du liquide s'écoule directement par cette ouverture, tandis que la partie qui ne l'a pu franchir, est poussée jusque dans le cul-de-sac formé par l'oblitération, et est obligée de rebrousser chemin pour retrouver la seule issue qui lui soit offerte.

Toutes ces anomalies peuvent être considérées comme des variétés de l'hyposdias dont je vais maintenant m'occuper.

L'hypospadias, caractérisé par la situation de l'ouverture uréthrale externe à la face inférieure de la verge, constitue-t-il une cause radicale de stérilité? Moschion, Galien, Paul d'Égine, Albucasis chez les anciens, répondent par l'affirmative; « non, dit Galien, parce que les hommes ainsi conformés manquent de semence féconde, mais parce que cette humeur, ralentie par la tortuosité du canal, ne se porte pas directement dans l'utérus. » Chez les modernes, quelques auteurs, et principalement des légistes, ont adopté cette manière de voir; ainsi le professeur Mahon est sur ce point très-explicite : « Toutes les fois, dit-il, qu'il y a déviation du canal de l'urèthre, soit qu'il se termine à la face inférieure ou supérieure du gland, ou bien encore de la verge, le coït peut, dans ce cas, avoir lieu, mais il ne sera jamais prolifique; et l'expérience vient à l'appui de cette proposition, c'est-à-dire qu'aucun individu ainsi conformé n'a jamais été propre à la génération (1). »

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(1) Montaigne, *Essais* Paris, 1793, t. II, p. 608

Cependant, Fabrice d'Aquapendente assurait déjà de son temps qu'il avait vu des enfants engendrés par des hypospades (2). Les *Éphémérides des curieux de la nature* contiennent, dans leurs années 1672 et 1679, des observations confirmatives de l'assertion de Fabrice; et Ruysch, qui avait primitivement partagé l'opinion de Galien, modifia un peu sa manière de voir et déclara que l'hypospade féconde rarement sa femme, au lieu de porter en lui une cause radicale de stérilité : *Homines hoc affectu laborantes* RARO *impregnant uxores, utpote semine non recto tramite prosiliente* (3).

J.-P. Frank a connu un hypospade père de trois enfants (4) ; J. Sédillot cite un exemple du même genre (5); Petit-Radel (6), Morgagni (7) en rapportent aussi; enfin, M. Ricord m'a assuré avoir constaté cette anomalie sur trois membres successifs de la même famille : l'aïeul, le fils et le petit-fils.

En présence de tant d'autorités que devient l'opinion si absolue de Mahon? Doit-on la reléguer parmi cette foule d'erreurs longtemps accréditées, et qui se dissipent à la lumière d'une observation plus rigoureuse? ou, la ramenant à des termes moins absolus, la doit-on regarder comme l'expression d'une partie seulement de la vérité?

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(1) Mahon, *Traité de médecine légale et de police médicale*, Paris, 1801, t. I, p. 48.

(2) Fabrice d'Aquapendente, *Opera chirurgica*, Padoue, 1617, cap. 69.

(3) Ruysch, *Opera omnia*, etc., Amsterdam, 1737, t. IV, p. 221.

(4) J.-P. Frank, *De curandis hom. morb. epitome*, Mannheim, 1792, lib VI, p. 513.

(5) Sédillot, *Recueil périodique de la Société de médecine de Paris*, Paris, 1810, t. XXXVII, p. 363.

(6) Petit-Radel, *Encyclopédie méthodique*, art. CHIRURGIE.

(7) Morgagni, *De sedibus et causis morborum*, Naples, 1762, epist. 46, art. 8.

Le lecteur va en juger lui-même.

L'ouverture anormale qui constitue l'hypospadias n'occupe pas constamment la même place : tantôt elle se trouve à la base du gland, à la fosse naviculaire, comme dans les cas d'absence congénitale du prépuce; tantôt sur le pénis, plus ou moins près des bourses; et tantôt, enfin, au fond d'une division longitudinale du scrotum, où elle a été prise quelquefois pour la vulve, et fait croire à l'hermaphrodisme.

De ces trois variétés d'hypospadias, il est incontestable que la dernière est une cause certaine de stérilité; cependant il est une circonstance excessivement rare, car on n'en connaît qu'un exemple, qui la rend facilement justiciable de la médecine; c'est lorsque le canal de l'urèthre est libre dans tout son parcours, et qu'une membrane seule oblitère le méat urinaire. Voici ce fait unique que possède la science : « Un soldat nommé Schmit, âgé de trente-quatre ans, portait depuis son enfance une perforation de l'urèthre, située au périnée, par où sortaient les urines et le sperme. Le docteur Marestin, ayant reconnu, en introduisant un stylet boutonné par cette ouverture, que le canal de l'urèthre était creux jusqu'à l'extrémité du gland, où il se trouvait bouché par une membrane qui avait probablement causé la crevasse du périnée, fit placer ce soldat comme pour l'opération de la taille, et, soulevant la membrane avec un stylet boutonné, pratiqua une incision qui remédia complétement à cette infirmité (1). »

En dehors de cette circonstance heureuse, dont le médecin devra toujours s'assurer, l'hypospadias scrotal ou périnéal est une cause radicale de stérilité, car le sperme ne va même pas lubrifier les organes génitaux externes de la femme; et tombe entre les jambes de ce triste infirme.

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(1) *Recueil périodique de la Société de médecine de Paris*, t. VIII.

Mais en est-il de même des deux autres variétés? Les faits que j'ai rapportés et dont j'aurais pu grossir le nombre, ne permettent plus de répondre par l'affirmative; et forcent la conviction en faveur de la faculté fécondante des hypospades. Mais alors comment expliquer le mécanisme de ce pouvoir fécondant; puisque j'ai établi, comme une des conditions de l'acte, la projection du sperme contre la matrice? Devons-nous adopter l'étrange hypothèse avancée, dans le *Dictionnaire des sciences médicales*, par les auteurs de l'article Hypospadias, et qu'ils expriment ainsi : « S'il était permis de chercher à expliquer physiologiquement le mécanisme de l'imprégnation dans le cas qui nous occupe, on pourrait peut-être en trouver le moyen dans une force attractive de succion, imprimée à tous les organes de la génération au moment de la copulation. Cette force qui tendrait à diriger le sperme jusque dans l'utérus et les trompes de Fallope, peut être appréciée par opposition avec la orce d'expulsion imprimée aux mêmes organes lors de l'accouchement, et qui est telle, que tous les corps étrangers introduits à cette époque dans le vagin en sont rejetés à l'instant. »

Cette hypothèse, qui n'est qu'une variante de celle de l'*aura seminalis*, ne repose sur aucun fait certain, sur aucune observation directe. Parce qu'un organe se débarrasse violemment des corps étrangers introduits dans son intérieur, il ne s'ensuit pas que ce même organe attire à lui les corps environnants; le premier phénomène trouve dans les lois de l'organisme une explication qui est l'alpha de la physiologie pathologique; le second, au contraire, exige une exception aux règles les mieux assises et le plus légitimement acceptées.

Non, l'utérus, s'il se contracte, ainsi que je l'ai dit ailleurs, sous l'action du contact immédiat du fluide spermatique, n'est pas doué d'une force de succion capable de lui amener la liqueur séminale.

Il faut trouver une autre explication à la fécondité des hypospades.

L'ouverture, qui constitue l'hypospadias, est modifiée dans sa forme et dans sa direction, selon que la verge se trouve à l'état de repos ou de turgescence; dans le premier cas, l'ouverture, plus ou moins arrondie par la flaccidité des tissus, regarde directement en bas et même en arrière ; pendant l'érection, au contraire, qui distend les tissus, cette ouverture devient oblongue et prend la forme, pour ainsi dire, d'un bec de flûte; cela est si vrai que ce changement commence à se produire par le redressement seul de la verge contre les parois de l'abdomen.

Or, s'il était possible d'appliquer à ce bec de flûte, une gouttière inférieure et se prolongeant jusqu'à l'extrémité du gland, on simulerait une espèce de canal dont la paroi supérieure serait formée par la face inférieure de la verge, et la paroi inférieure par la gouttière dont je viens de parler, canal artificiel dans lequel le sperme pourrait, jusqu'à un certain point, librement circuler.

La muqueuse vaginale remplit, à mon sens, la fonction de cette gouttière et prête un de ses plis longitudinaux au rôle qu'elle doit ici remplir.

Cette explication, quoique toute mécanique, a l'immense avantage de respecter les conditions physiologiques de la fécondation, et de rendre également compte des faits avancés pour et contre la fécondité des hypospades, car dans les cas d'un coït négatif, on doit constater que l'ouverture anormale ne subit pas, par l'effet de l'érection, les changements de forme et de direction que j'ai dit se produire dans les cas d'une copulation fécondante.

Cette manière de voir est encore légitimée par la disposition anatomique qu'offrent tous les épispades dont nous possédons l'observation depuis Ruysch, qui paraît être le premier à avoir noté cette anomalie. Salzmann l'a trouvée chez un jeune paysan âgé de vingt-deux-ans (1); l'urèthre, normal depuis la vessie jusqu'à l'arcade du pubis, passait dans ce point entre les deux racines du corps caverneux pour aller s'ouvrir sur le dos de la verge. A partir de l'émergence, l'urèthre n'était plus qu'une gouttière qui régnait tout le long du pénis jusqu'au sommet du gland; celui-ci était très-volumineux ainsi que la verge, plus courte cependant que dans l'état ordinaire; l'urine suivait la gouttière sous forme de jet, mais sans s'éparpiller. Les érections étaient à peu près nulles, et Salzmann décida que ce jeune homme était impropre au mariage.

« Nous avons vu, dit Chopart, un garçon âgé de dix ans qui avait l'urèthre au-dessus du corps caverneux ; l'orifice du canal était près de la symphyse du pubis, et l'urine sortait par jet du côté du ventre; l'urèthre dans le reste de sa longueur était ouvert et formait une espèce de gouttière rougeâtre qui se terminait par une substance charnue, en forme de gland aplati et qui aurait été fendu dans la moitié de son épaisseur (2). »

Le mécanisme que j'invoquais tout à l'heure pour expliquer la faculté fécondante des hypospades, est plus compréhensible dans l'épispadias qui offre constamment la gouttière dont la première anomalie est quelquefois dépourvue.

Cependant les épispades sont généralement impropres à la génération, à cause surtout de la petitesse de la verge, et de la non-érection des corps caverneux qui ne permettent pas l'intromission, malgré les désirs vénériens qui existent, et la présence normale des organes reproducteurs essentiels, comme on peut le voir par le travail de M. Dolbeau (1), le plus complet et le plus récent sur une infirmité qui ne doit pas m'arrêter plus longtemps.

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(1) Salzmann, *De herniâ vesicæ urinariæ*, Strasbourg, 1732, obs. 65.

(2) Chopart, *Œuvres complètes*, *Traité des maladies des voies urinaires*, t. II, p. 289.

Quoi qu'il en soit et pour en revenir au mécanisme du pouvoir fécondant des hypospades, je dois déclarer que l'explication que je viens de donner se trouve depuis longtemps dans la science, et que, pour la soutenir, Morgagni la corrobore par l'exemple du pénis des tortures et des vipères, dont le plancher inférieur de l'urèthre manque naturellement et se trouve suppléé, pendant le coït, par la tunique vaginale.

Je ferai également remarquer que cet artifice dans le mécanisme de la fécondation, serait annulé dans le cas où l'hypospadias se compliquerait d'autres vices de conformation de la verge, ce qui n'est pas rare, et dans celui où le gland se renverserait en arrière pendant le coït, et s'interposerait ainsi entre la matrice et l'ouverture uréthrale; aggravation qui se présente souvent, parce que le gland ne participe pas à la turgescence de la verge, ainsi que Morgagni l'a observé.

En résumé, l'épispadias est presque toujours un motif d'impossibilité de féconder, à cause de la disposition de la verge qui ne permet pas ou qui ne permet qu'incomplétement le coït.

L'hypospadias, au contraire, n'est une cause absolue et radicale de stérilité : 1° que si l'ouverture anormale siége au périnée ou à la base de la verge, avec oblitération de la partie antérieure de l'urèthre; 2° que si, par l'effet de l'érection, elle ne subit aucun changement de forme et de direction, et reste tournée en bas et en arrière; 3° enfin que si le gland et les corps caverneux n'entrent pas en érection.

Ces conclusions que j'indiquais il y a vingt ans, ont été confirmées par les travaux qui ont été faits depuis cette époque, et dont le mémoire du professeur Bouisson, de Montpellier, est le plus complet et le plus considérable (1).

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(1) Dolbeau, *De l'épispadias ou fissure uréthrale supérieure et de son traitement*. Paris, 1860.

Je ne puis ici qu'en donner les conclusions qui sont les suivantes : « 1° Il est des cas où il y a possibilité de coït et de fécondation : ce sont la plupart de ceux où il existe un hypospadias balanique avec ouverture anormale, libre et assez large, ou un hypospadias pénien avec ouverture rapprochée du gland.

» 2° Dans d'autres cas, il y a possibilité de coït sans fécondation. Cette catégorie comprend l'hypospadias pénien sans gouttière uréthrale, ou l'hypospadias scrotal, sans trop forte incurvation de la verge.

» 3° Il est des circonstances dans lesquelles le coït et la fécondation sont difficiles ou impossibles ; à cette catégorie appartiennent l'hypospadias scrotal, avec forte incurvation de la verge, et le plus grand nombre des cas d'hypospadias périnéal.

» 4° Enfin, dans un quatrième groupe, on peut ranger les cas où il y a impossibilité simultanée de coït et de fécondation. Ce sont les cas d'hypospadias vulviforme avec incurvation, flaccidité du pénis et chryptorchidie. »

La chirurgie n'est pas désarmée dans tous les cas d'hypospadias ; on peut quelquefois, par un débridement ou une anaplastie, refaire une ouverture uréthrale à peu près normale, et remédier ainsi à la stérilité.

Mais dans les cas où ces anomalies de l'urèthre sont des causes certaines et inguérissables d'infécondité, il est permis de recourir à la fécondation artificielle dont on trouvera plus loin l'histoire et le mécanisme.

3° *Multiplicité des méats urinaires et de l'urèthre.* — L'urèthre peut déboucher au gland par plusieurs ouvertures. Fabrice de Hilden donne à une de ses observations un titre qui ferait supposer en même temps l'existence de deux urèthres : *De duplici ductu urinario* (1). Haller parle même de trois ouvertures : *Tria ostia in uno glando* (2), et Vidal (de Cassis) assure avoir observé un fait analogue : « Il y avait encore ici trois ouvertures, dit-il ; deux perçaient le gland, et la troisième était à la partie la plus inférieure de la fosse naviculaire, à la base même du frein. Celle-ci était la plus large ; les deux du gland, extrêmement étroites, ne laissaient passer l'urine que quand elle était fortement projetée ; le sperme ne pouvait les traverser, etc. (3). » Ce fait n'est qu'une variété de l'hypospadias incomplet dont j'ai parlé tout à l'heure, et caractérisé par deux ouvertures, dont l'une est à sa place ordinaire, et dont l'autre siége entre le gland et les bourses, plus rapprochée tantôt du gland et tantôt des bourses.

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(1) Bouisson, *Tribut à la chirurgie.* — *De l'hypospadias et de son traitement.* Montpellier, 1861, t. II, p. 484.

Cette multiplicité d'ouvertures doit-elle faire admettre la multiplicité de l'urèthre, comme quelques auteurs l'ont cru d'après l'observation de Fabrice de Hilden ? Cette question n'est pas précisément pour nous d'une importance majeure, car il importe peu, pour le résultat qu'il s'agit d'atteindre, c'est-à-dire la fécondation, que le sperme s'échappe par deux voies différentes, pourvu qu'il s'échappe dans les conditions nécessaires à l'imprégnation, c'est-à-dire avec une certaine force et dans l'axe de la verge. Cependant, un urèthre double modifierait assez profondément ces conditions, pour qu'il soit nécessaire de rassurer les praticiens sur l'existence de cette anomalie. Il est incontestable, en effet, que plusieurs ouvertures ont été observées au gland, et que toutes ne communiquaient pas avec le même canal ; mais il est également certain qu'il n'a jamais existé qu'un seul urèthre. Les autres conduits qui s'ouvraient à côté du méat urinaire, étaient de fausses routes ou des canaux artificiels, qui n'avaient aucun des caractères du canal de l'urèthre.

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(1) Fabrice de Hilden, *Observ. et curat. chirurg. centuria*. Bâle, 1606, cent. 1.

(2) Haller. *Elementa physiologiæ*, Lausanne, 1757-1766, t. VII, lib. XXVII, p. 470.

(3) Vidal (de Cassis), *Traité de pathologie externe*, 4ᵉ édit. Paris, 1855, t. IV, p, 486.

4° *Déviations de l'urèthre.* — Les ouvertures anormales que j'ai dit tout à l'heure constituer l'hypospadias et l'épispadias, ne sont pas toujours liées, ainsi que je l'ai fait remarquer, à une oblitération partielle de l'urèthre ; elles sont quelquefois la conséquence d'une déviation de ce canal, comme il arrive le plus ordinairement dans l'épispadias, par exemple, où l'urèthre longe le dos de la verge.

Quelquefois les conditions normales des rapports de l'urèthre avec les corps caverneux sont encore plus profondément modifiées que je viens de le dire, et on voit l'urèthre s'ouvrir à la région inguinale, ainsi que Haller en rapporte un exemple (1).

D'autres anomalies de direction peuvent modifier les rapports de l'urèthre et de la prostate, à ce point que les canaux éjaculateurs et les vésicules séminales manquent, comme dans la très-curieuse observation d'hermaphrodisme rapportée par M. Bouillaud et dont il sera question plus loin.

Dans tous ces cas, la chirurgie désarmée reste impuissante devant une erreur de la nature au-dessus de nos ressources.

B. *États morbides de l'urèthre.* — Les accidents qui ont le pénis pour siége peuvent n'intéresser que le canal de l'urèthre, ou s'adresser aux autres éléments qui constituent la verge.

Ces accidents se produisent le plus ordinairement de dehors en dedans ; mais ils peuvent également être amenés par des causes qui agissent de dedans en dehors.

Les premiers, contusions, déchirures et plaies contuses de l'urèthre, sont presque toujours dus à une chute ou à un coup qui a porté sur le canal ; la section totale ou partielle de l'urèthre, avec section ou lésion des autres tissus de la verge, reconnaît pour cause tantôt une opération chirurgicale, tantôt un accident volontaire ou involontaire, comme l'amputation du pénis dans des cas de désespoir ou de jalousie, ou un coup de feu, ainsi que je l'ai vu pendant le combat de juin 1848.

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(1) Haller, *loc. cit.*

Les causes qui procèdent de dedans en dehors sont les corps étrangers proprement dits et les calculs, surtout les débris de pierres à la suite de la lithotritie; les instruments même qu'on introduit dans l'urèthre, soit pour broyer les calculs ou les extraire, soit pour évacuer la vessie ou pour cautériser un rétrécissement, etc., figurent aussi, pour une grande part, dans les plaies et déchirures de l'urèthre.

Tous ces accidents n'ont pas, au point de vue qui nous occupe, une égale gravité.

Si l'urèthre seul est accidentellement emporté dans la totalité ou dans une partie seulement de son parcours, depuis l'arcade du pubis jusqu'au méat, on se doit considérer comme en présence d'une espèce d'hypospadias avec oblitération partielle de l'urèthre, et dont l'ouverture de celui-ci se trouve plus ou moins rapprochée du scrotum.

Dans d'autres circonstances, l'urèthre, sans éprouver une grande perte de substance, est simplement ouvert sur un point de son parcours, soit par une cause ayant agi de dedans en dehors, comme dans les cas de graviers, de fausse route pendant le cathétérisme; soit par une action extérieure, comme dans les cas de contusions ou de blessures.

Cette ouverture non cicatrisée est généralement le point de départ de fistules et d'infiltrations urinaires qui, sans abolir d'une manière absolue la faculté procréatrice, la compromettent par les désordres dont deviennent le siége les organes externes de la génération, et aussi par le dégoût et l'éloignement qu'inspire cette dégoûtante infirmité.

Dans les cas plus heureux où la plaie de l'urèthre a pu être guérie, la cicatrice qui en résulte déforme et rétrécit quelquefois le canal à ce point que, non-seulement le sperme est ralenti et arrêté dans sa marche, mais encore le pénis, pendant l'érection, est tiré en bas de façon à rendre la copulation impossible; on rentre alors dans le cas des coarctations de l'urèthre dont je me suis occupé plus haut, avec cette circonstance aggravante que cette cicatrice est presque toujours plus difficile à faire disparaître que les rétrécissements, bien que les moyens réparateurs soient identiques dans l'un et l'autre cas.

Dans d'autres circonstances, l'urèthre n'est pas seul atteint: les corps caverneux subissent sa destinée, soit qu'ils n'éprouvent qu'une perte de substance, soit qu'ils disparaissent emportés, comme dans les cas de gangrène, d'amputation chirurgicale ou de perte accidentelle de la verge, etc.

Quand les corps caverneux ne sont que contusionnés ou blessés, le dommage n'est pas grand au point de vue de la fonction procréatrice; tout au plus peut-on craindre une déformation du pénis qui, jointe à la cicatrice de la plaie uréthrale, vienne augmenter les difficultés de la copulation dont j'ai tout à l'heure fait ressortir la gravité.

Lorsqu'un accident ou une opération ont emporté la verge, l'acte génital n'est pas toujours compromis; si une portion du pénis est conservée, la copulation et la fécondation sont dans quelques cas possibles; mais si, au contraire, la verge a été enlevée au niveau ou presque au niveau du pubis, l'intromission ne peut avoir lieu, et, par suite, le jet spermatique, s'égarant à l'entrée du sanctuaire de la femme, ne peut parvenir jusqu'à l'organe gestateur.

Je sais bien qu'artificiellement, surtout si la femme est affectée d'un prolapsus utérin, la fécondation peut à la rigueur se produire; j'ai même lu quelque part la description d'un appareil cylindrique, destiné à conduire le sperme jusqu'au col de l'utérus et à remplacer ainsi le canal de l'urèthre absent. C'est dans ces cas, comme dans ceux de l'hypospadias ou autres anomalies de l'urèthre, que la fécondation artificielle, dont je parle plus loin, trouve un motif légitime et avouable.

En dehors de cette suprême ressource, il faut que l'homme se résigne ; l'art et la science ne peuvent plus rien pour lui.

§ III. — États congénitaux ou accidentels de la verge capables d'entraîner la stérilité.

Parmi les états congénitaux ou acquis de la verge, incompatibles avec la puissance fécondante, il ne peut être ici question que du volume ou de la direction du pénis *pendant le coït*, c'est-à-dire grosseur démesurée, petitesse extrême ou flaccidité de la verge, car, en exceptant le canal de l'urèthre dont je viens d'étudier les altérations, cet organe ne remplit qu'un rôle de sustentation dans l'acte de la fécondation.

Comme difformité congénitale, la petitesse extrême de la verge, soit en longueur, soit en circonférence, peut, dans les *conditions normales* de conformation de la femme, être une cause de stérilité. Le vagin n'étant point distendu par un pénis suffisament gros, laisse en contact les plis de sa muqueuse, lesquels, interposés entre le museau de tanche et le gland du pénis, interceptent le jet spermatique et l'empêchent d'arriver jusqu'à l'ouverture de l'utérus.

Dans certaines conditions anormales du côté de la femme, comme dans les cas de descente de matrice, la fécondation est rendue possible par ce déplacement même de l'organe utérin qui, lui, alors, efface les plis de la muqueuse vaginale.

Un pénis trop volumineux, pouvant à peine franchir la vulve, amène aussi des résultats négatifs par un mécanisme entièrement analogue à celui d'une verge trop courte. Je ne parle pas de la douleur éprouvée par la femme qui, sous son influence, se livre à des mouvements bien souvent contraires à la fécondation, comme on le verra plus loin.

Une verge trop longue, en dépassant l'ouverture inférieure de l'utérus et en allant perdre sa tête dans le cul-de-sac vaginal, égare le fluide spermatique et l'éloigne de son point de mire, qui est le museau de tanche. Un peu de précaution du côté de l'homme, ou un mouvement de recul du côté de la femme peuvent facilement obvier à ce désavantage.

Ces deux inconvénients sont rarement assez exagérés pour entraîner l'infécondité; d'ailleurs, comme ils n'affectent que le volume de la verge, et comme, d'autre part, la capacité du vagin et la position de l'utérus sont essentiellement variables, il s'ensuit que ces anomalies sont les causes d'une stérilité purement relative, et qu'elles n'annulent aucune des conditions de la fécondation chez l'homme, considérée isolément.

Mais il n'en est plus de même quand la verge ne possède pas la rigidité de l'érection, car alors une des conditions de la fécondation chez l'homme, l'éjaculation, est fatalement détruite.

Il est incontestable que la stérilité n'est pas une cause d'impuissance. Cette proposition a été bien souvent mise hors de doute dans le cours de cet ouvrage (1). Mais en est-il de même pour la proposition renversée? En d'autres termes : l'*impuissance est-elle une cause de stérilité?*

En restant dans les conditions ordinaires du coït, je n'hésite pas à répondre par l'affirmative : oui, l'impuissance est une cause de stérilité.

Mais en se plaçant au point de vue de la sécrétion spermatique, je suis, au contraire, autorisé à répondre : non, l'impuissance n'altère pas le principe de la fécondité.

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(1) Voyez entre autres les p. 267 et suiv.

Expliquons-nous. — Je note que, dans les lignes qui vont suivre, je limite le mot impuissance à la seule flaccidité de la verge.

De toutes les conditions que j'ai reconnues nécessaires, du côté de l'homme, à l'accomplissement de la fécondation, la flaccidité de la verge n'en détruit qu'une : le lancement du sperme contre le museau de tanche, c'est-à-dire l'éjaculation séminale.

Sans doute, on peut avec de l'art et de la patience introduire dans le vagin une verge mollasse, et assister à la déplétion des réservoirs spermatiques ; mais quelque effort que l'on fasse, on n'obtient jamais les saccades par lesquelles est lancé le sperme dans les circonstances normales.

La liqueur séminale ne pénètre point alors dans l'utérus : 1° parce que, sortant sans force, elle ne franchit pas l'espace qui sépare le museau de tanche et le gland du pénis, en admettant même que les plis du vagin soient suffisamment effacés ; 2° parce que l'utérus, privé du choc de son excitant naturel, le sperme, se soustrait à cette contractilité que j'ai dit être si favorable à la conception.

Quoique ces défauts dans les conditions physiologiques du coït rendent parfaitement compte de l'infécondité qui accompagne l'impuissance, j'ai voulu savoir si, par une loi fatale de corrélation inéluctable, l'impuissance essentielle n'entraînait pas nécessairement la suspension de la sécrétion spermatique.

Sans doute, il est parfaitement établi en physiologie que lorsqu'une fonction ne s'accomplit plus, les organes qui lui sont consacrés finissent par s'altérer et se perdre. Or, l'impuissance, étant une cause radicale de stérilité par impossibilité de copulation, ne peut-on pas admettre qu'il existe une telle corrélation entre l'organe copulateur et l'organe sécréteur du sperme, que la lésion de l'un amène une lésion identique sur l'autre? Cette influence est vraie, jusqu'à un certain point, quand elle s'exerce des testicules sur la verge, car on sait que les castrats et les eunuques, s'ils ne sont pas complétement impuissants, ne jouissent que de facultés viriles très-bornées.

En est-il de même de l'influence de l'organe copulateur sur l'organe sécréteur du sperme, et conséquemment sur le produit de cette sécrétion? Il est difficile de résoudre le problème d'une manière générale, malgré les facilités que semble devoir fournir le microscope. Cependant, sans revenir sur les causes si nombreuses de l'impuissance, je vais essayer de formuler une réponse d'après les expériences que j'ai dirigées dans ce sens, en faisant observer que je n'ai tenu compte que de la sécrétion testiculaire, sans m'occuper des altérations qui peuvent en atteindre le produit et dont l'étude remplit le chapitre suivant.

Quand l'impuissance ne s'accompagne pas de spermatorrhée, quand elle n'est pas le résultat d'un affaiblissement général, d'une détérioration de l'organisme, en un mot, quand elle n'a pour cause qu'un trouble de l'influx nerveux ou qu'elle est produite par la faiblesse des muscles qui concourent à l'érection, ainsi que j'en ai un exemple au moment ou j'écris ces lignes, j'ai presque constamment trouvé des zoospermes dans la liqueur séminale, surtout lorsque l'impuissance ne remontait pas à une époque trop éloignée. Chez le malade dont je viens de parler, la verge n'a qu'une demi-érection, malgré la vivacité de désirs vénériens et malgré des pollutions nocturnes qui se renouvellent une ou deux fois par semaine. La masturbation détermine l'excrétion du sperme, avec jouissance et avec des saccades assez faibles et proportionnées à la ténuité de l'érection. Chez ce malade dont l'impuissance est survenue, sans cause connue, pendant la traversée de Montévideo au Havre, la liqueur séminale contient des zoospermes. L'anaphrodisie date de six mois environ et s'améliore sensiblement sous l'influence de la strychnine et sous l'action des courants galvaniques.

Mais quand l'organisme est profondément altéré, comme dans le diabète; quand l'impuissance est le résultat de pertes séminales ou autres, qui ont jeté la constitution dans l'affaiblissement et le marasme, les testicules participent à cette faiblesse générale, sans que le trouble de leur sécrétion puisse raisonnablement être attribué à l'impuissance; ce sont deux phénomènes concomitants de l'altération de l'organisme, et ils n'ont entre eux que les relations qui unissent les symptômes d'une même affection.

En résumé, l'impuissance en elle-même, circonscrite dans le fait seul de la non-érection de la verge, n'empêche pas la sécrétion du sperme, de sorte que la possibilité de la copulation lui étant rendue, le malade conserve tous les droits à la fécondation.

CHAPITRE IV

ÉTAT PATHOLOGIQUE DU SPERME.

La diathèse est une véritable constitution morbide; elle imprime donc son caractère spécial à toutes les parties de l'organisme et communique aux produits des sécrétions le principe toxique qui la constitue; c'est ainsi que s'expliquent certaines transmissions pathologiques : celle des nourrices à leurs nourrissons par le lait; celle de l'un des époux malade, au moyen des sueurs que l'autre époux absorbe. — C'est la contagion de la phthisie admise par les anciens.

Les produits de la sécrétion testiculaire et ceux de la sécrétion ovarienne subissent aussi l'influence des diathèses : tantôt ils sont taris dans leur source, comme dans la période avancée de la tuberculose; tantôt ils n'ont plus une vitalité suffisante pour que le germe fécondé vive et se développe, comme dans l'intoxication syphilitique; tantôt enfin ils communiquent au nouvel être assez d'énergie pour que la gestation s'accomplisse, mais ils lui impriment le cachet diathésique dont eux-mêmes sont marqués.

D'autres circonstances, telles que l'alimentation, les habitudes de la vie, la mollesse, les vices, etc., portent également atteinte, comme les diathèses, aux produits des sécrétions testiculaire et ovarienne.

L'influence des unes et des autres, quelquefois méconnue chez les individus, est manifeste chez les peuples : Rome, tant qu'elle honora et pratiqua la pauvreté, put suffire à elle seule, sans admettre les peuples conquis dans son armée, à une reproduction inouïe d'hommes qu'elle perdait dans des guerres continuelles; mais quand le luxe, et avec lui des vices de toutes sortes, eut pénétré dans les mœurs, une décroissance notable se manifesta dans le recensement des citoyens. Tite-Live se plaint de cette dégradation dans le chiffre de la population; Auguste ordonne aux chevaliers romains de se marier: vaine précaution! les mariages des chevaliers romains sont stériles; le sénat s'emplit d'étrangers qui convoitent le trône devenu vacant; et bientôt l'empire, dans lequel le luxe fait la solitude, tombe aux mains des nations du Nord, pauvres mais fécondes.

En Asie, sous un climat fortuné et avec la faculté de prendre plusieurs femmes, les Orientaux manquent de bras pour défricher les terres.

En Europe, les villes les plus riches seraient bientôt désertes, si les contrées pauvres ne comblaient annuellement, par des envois d'hommes, le déficit qu'y occasionne la richesse. La Suisse, la Savoie, l'Auvergne et la Galice sont les grandes ruches de l'Europe moderne.

Dans nos cités même une différence notable dans le nombre des naissances se remarque entre les quartiers pauvres et les quartiers riches.

Nous-mêmes n'observons-nous pas les avantages que certains individus retirent de leur absence des villes et de leur séjour à la campagne, surtout quand ils se livrent à la chasse ou à des travaux champêtres? Tel qui part stérile revient quelquefois avec des enfants. La thérapeutique des établissements thermaux n'a souvent pas d'autre secret; cette influence peut marcher parallèlement avec celle qu'exerce sur les esprits préoccupés, les plaisirs et les distractions dont on a soin de fournir les établissements de ce genre.

Mais pour en revenir aux causes des altérations spermatiques — et je n'entends parler que de celles des zoospermes — je signalerai les diathèses, dont quelques-unes seulement, la syphilis, la scrofule, la tuberculose, etc., peuvent suspendre la sécrétion testiculaire ou détruire, en tout ou en partie, la vitalité des spermatozoïdes; puis la spermatorrhée qui amène l'un et l'autre de ces deux résultats; ensuite la débilité de la constitution, les anémies profondes, les altérations de la vie plastique, comme dans le diabète, la vieillesse, en un mot tous ces états misérables de l'organisme, dans lesquels les zoospermes ne sauraient trouver une vitalité qui n'existe pas; enfin, une vie molle et luxueuse, des habitudes de paresse, les excès prolongés d'une nourriture succulente et recherchée, agissent sur les individus comme sur les peuples, en empâtant, pour ainsi dire, les animalcules spermatiques, et en étouffant leur énergie dans un noyau adipeux.

Il n'est pas toujours facile de reconnaître ces altérations, surtout celles qui dépendent d'un état diathésique. Lorsque la diathèse doit entraîner la mort et qu'elle est assez avancée, les zoospermes sont peu nombreux et n'exécutent presque aucun mouvement; on voit que la vie leur manque; souvent même la sécrétion testiculaire est tarie, et, comme dans les nécropsies rapportées par Curling et Rayer, dont j'ai parlé plus haut (1), on ne rencontre plus d'animalcules spermatiques. Lorsque, au contraire, les spermatozoïdes ont assez de force pour que la gestation ait lieu, tout en imprimant au nouvel être le cachet de la diathèse, l'altération du zoosperme, dans l'état actuel de la science, est impossible à reconnaître. J'ai examiné et étudié des spermatozoïdes de syphilitiques, de tuberculeux, de cancéreux, de rhumatisants, etc., dont les enfants étaient atteints de ces diathèses, et j'avoue qu'il m'a été impossible, non-seulement de les distinguer entre eux, mais encore de les différencier des spermatozoïdes d'hommes n'offrant aucune diathèse.

Dans la spermatorrhée, dans les anémies prononcées, dans les cachexies pures ou diathésiques, dans la convalescence des maladies graves, en un mot dans tous les états de profonde débilitation de l'organisme, la sécrétion testiculaire peut se suspendre ; mais, le plus ordinairement, elle se continue et donne naissance à quelques rares spermatozoïdes, sans force et sans énergie. Quelquefois les zoospermes sont assez nombreux sous le champ du microscope, mais les uns ont la tête plus petite et les autres la queue plus courte que les spermatozoaires bien conformés ; d'autres fois enfin, à côté de quelques zoospermes à l'état normal, on trouve des cellules épithéliales, plus ou moins nombreuses, et contenant des granules ; on dirait que la cellule épithéliale, en voie de formation, s'est détachée avant terme, ce que Wagner et Pouchet nomment la chute ou plutôt le renversement de l'épithélium.

Cet arrêt de développement se rencontre surtout, et à différents degrés, dans le sperme des vieillards et dans celui des personnes atteintes d'atrophie testiculaire. Tantôt, comme dans les cas précédents, la cellule s'est détachée avant que les granules n'aient, par leur réunion, formé la tête du zoosperme; tantôt la tête est formée, mais la queue manque; tantôt celle-ci existe, mais est enroulée sur elle-même et rappelle assez la forme du cor de chasse; tantôt enfin le développement du zoosperme est complet, mais le mouvement fait défaut.

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(1) Voyez la page 567.

Dans tous ces états, marqués par la débilité soit de l'économie tout entière, soit seulement de l'organe sécréteur du sperme, les spermatozoïdes subissent un arrêt de développement plus ou moins avancé, ou ne sont animés que d'une vitalité insuffisante.

Dans le premier cas, la fécondation n'a pas lieu; dans le second, la fécondation peut s'opérer, mais le nouvel être, privé de vitalité, se fixe à peine à la muqueuse utérine, s'en détache et meurt au premier travail congestif de l'appareil génital, ou après un effort ou une fatigue de la femme.

C'est une des causes, comme je l'ai déjà dit, des avortements précoces (1).

L'absence ou les altérations des zoospermes dont je viens de parler, ne se rencontrent pas toujours chez les hommes stériles. Quelquefois — et malheureusement ces cas sont trop nombreux pour notre présomption — il est impossible de constater le moindre trouble soit dans la forme, soit dans la vitalité des spermatozoïdes; il en est ainsi chez les hommes dont la stérilité ne peut être rattachée qu'à la vie molle qu'ils mènent, qu'aux excès de table qu'ils font. Dans ce cas, les spermatozoaires sont suffisamment nombreux, vivants, bien conformés, en un mot, dans les meilleures conditions apparentes pour donner la vie qu'ils ne peuvent cependant communiquer à l'ovule.

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(1) Voyez les pages 519 et suiv.

Il y a là une inconnue que la science n'a pas encore dégagée, pas plus que la physionomie du zoosperme, porteur d'une marque diathésique.

La pathologie du spermatozoïde est encore à faire, ou pour mieux dire, l'école histologique nous doit l'histoire des arrêts de développement et des altérations de la cellule épithéliale, et celle des arrêts de développement et des altérations des granules qui, par leur réunion, constituent le spermatozoaire.

Quoique cette histoire ne soit même pas ébauchée, la médecine n'est pas désarmée, dans tous les cas, en face d'une sécrétion testiculaire incomplète ou anormale. Les causes que j'ai assignées aux troubles de cette sécrétion indiquent la thérapeutique spéciale qu'il faut opposer à chacun d'eux.

Je n'ai point à passer en revue ces diverses médications, faciles à comprendre ; mais je puis assurer que, dans les cas où l'organe sécréteur n'est pas frappé de mort, comme dans l'atrophie et certaines diathèses, une thérapeuthique rationnelle et bien conduite peut ramener la sécrétion spermatique dans ses conditions normales, et rendre à l'homme toutes ses facultés fécondantes.

SECTION DEUXIÈME

STÉRILITÉ CHEZ LA FEMME

La femme, dans l'acte de la génération, remplit un rôle essentiellement complexe, sans parler de la copulation dont je n'ai plus à m'occuper ici.

Comme l'homme, elle sécrète dans les profondeurs de ses organes un produit qui, pour arriver du lieu de sa sécrétion à celui de son excrétion, parcourt des voies aussi semées d'écueils et aussi fertiles en obstacles que celles que le sperme franchit pour aller des testicules au méat urinaire.

Pour l'accomplissement de ce premier acte de son rôle, la femme se suffit à elle-même; elle le remplit par les lois seules de son organisation, et le concours que quelques physiologistes ont prétendu que lui prêtaient certaines circonstances extérieures, telles que le climat, le coït, etc., est d'une importance secondaire et quelquefois douteuse.

Mais après cet acte qui, avec la sécrétion spermatique, est en quelque sorte le prélude de la fonction génératrice, il faut, pour que celle-ci s'accomplisse, que la femme sorte de son égoïsme et réalise ce que, dans un style figuré, madame de Staël appelait un *égoïsme à deux*.

La part que la femme prend dans cette nouvelle phase de son rôle devient de plus en plus complexe. Ses organes étant le théâtre sur lequel va se passer le grand acte de la formation d'un nouvel être, elle doit recevoir et conduire jusqu'au produit de sa sécrétion propre l'élément indispensable que lui fournit le mâle, et, une fois ces deux éléments en présence, présider à leur union, et offrir un lieu convenable au résultat de cette union, afin qu'il rencontre toutes les conditions nécessaires à son développement ultérieur.

En prenant séparément chaque partie du rôle si compliqué de la femme dans l'acte de la génération, on trouve cet acte partagé en quatre étapes, si complétement distinctes, qu'il est impossible de ne pas les accepter comme base d'une division méthodique.

Ces quatre étapes sont :

1° L'acte de sécrétion et de progression du produit femelle, c'est-à-dire l'ovulation, comprenant la fonction ovarienne et la fonction tubaire ;

2° L'acte de réception et de progression du produit mâle, comprenant les fonctions du col de l'utérus ;

3° L'acte de réunion du produit mâle et du produit femelle, comprenant la fonction d'imprégnation ;

4° L'acte de gestation, comprenant les fonctions utérines.

Cette division, toute physiologique, me paraît être le guide le plus sûr pour nous reconnaître au milieu des causes si nombreuses et encore si mal étudiées de la stérilité chez la femme ; aussi, après en avoir pesé les avantages et les inconvénients, je ne puis pas ne pas la préférer comme principe de classification des maladies qui me restent à examiner.

J'aurai donc quatre groupes bien distincts d'altérations fonctionnelles pouvant entraîner la stérilité chez la femme, et correspondant aux quatre actes physiologiques admis ci-dessus, à savoir :

Premier groupe. — Troubles de l'ovulation.

Deuxième groupe. — Troubles de la réception spermatique.

Troisième groupe. — Troubles de l'imprégnation.

Quatrième groupe. — Troubles de la gestation.

Chacune de ces divisions formera un chapitre de la pathogénie de la stérilité chez la femme.

CHAPITRE PREMIER

TROUBLES DE L'OVULATION.

L'ovulation ou l'acte ovarien se compose, ainsi que je l'ai dit dans la physiologie de l'espèce, de la fonction ovarienne, de la fonction tubaire et de la fonction cataméniale, dite *ménorrhagie;* j'aurai donc à examiner :

1° Les troubles de la fonction ovarienne;
2° Les troubles de la fonction tubaire;
3° Les troubles de la fonction cataméniale.

Entre temps, comme je l'ai fait pour le produit de la sécrétion spermatique, j'exposerai l'état pathologique du produit ovarien, c'est-à-dire de l'ovule et de l'embryon.

TITRE Ier. — TROUBLES DE LA FONCTION OVARIENNE.

§ I. — Anomalies des ovaires.

Absence. — Il est évident que pour que cette infirmité trouve place dans le cadre de la stérilité de la femme, il faut qu'elle s'adresse simultanément aux deux ovaires, car si l'un de ces organes existe bien conformé, la conception peut se produire, comme chez l'homme qui n'a qu'un seul testicule normal dans le scrotum.

Les ovaires jouent un rôle si prépondérant dans l'acte de la génération, que leur absence entraîne presque toujours celle des trompes et de l'utérus, ou tout au moins un arrêt de développement de ces organes ; le vagin est également plus étroit qu'à l'ordinaire, et les nymphes et le clitoris sont à l'état rudimentaire.

A ces anomalies de l'appareil génital ne se joignent pas toujours des signes extérieurs qui révèlent cette infirmité et consignés dans les auteurs (1). Ainsi quelques femmes atteintes de cette anomalie, n'ont pas de barbe au menton et leurs mamelles ont un développement convenable; mais le signe capital, on pourrait dire unique, qui, coïncidant avec les anomalies dont je parle, met sur la voie du diagnostic, est l'absence absolue des règles, de tout symptôme de molimen et de menstrues supplémentaires.

Cette infirmité, difficile à constater directement sur le vivant, ne se décèle que par les phénomènes que j'indique, et aussi par une stérilité qui est absolue et irrémédiable.

Heureusement l'absence des deux ovaires est un fait rare; elle est infiniment moins commune que l'absence d'un seul ovaire qui ne saurait nous arrêter, puisque l'hémorrhagie menstruelle et l'aptitude à la fécondation sont conservées ; et moins commune aussi que le développement rudimentaire dont je dois dire quelques mots.

Arrêt de développement. — Il se présente sous deux formes : dans l'une l'ovaire est comme chez le fœtus : c'est une langue très-petite qui ne contient aucune vésicule de de Graaf; dans l'autre, l'ovaire a la forme de celui de la femme, mais il est petit, aplati et ne renferme que quelques vésicules.

Cette anomalie, même quand elle atteint les deux ovaires, n'entraîne pas fatalement l'arrêt de développement d'une ou de plusieurs parties de l'appareil génital; cependant l'utérus est l'organe qui le plus souvent suit les destinées des ovaires, ainsi qu'on peut le voir dans l'observation que j'ai recueillie à l'Hôtel-Dieu, et dans laquelle l'appareil copulateur existait et fonctionnait normalement (2).

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(1) Voyez Chérau, *Mémoires pour servir à l'étude des maladies des ovaires*, 1er mémoire. Paris, 1844, p. 117. — Scanzoni, *Traité pratique des maladies des organes sexuels de la femme*, trad. par les docteurs Doz et Socin. Paris, 1858, p. 331.

(2) Voyez la page 472.

Quand le développement rudimentaire porte sur les deux ovaires, ce qui est le plus commun, le pronostic et le diagnostic sont identiques avec le diagnostic et le pronostic de l'absence des deux ovaires. Le résultat est une stérilité absolue et inguérissable.

Il n'en est pas de même si un des ovaires est à l'état normal; dans ce cas les règles et l'aptitude à la fécondation subsistent.

Ectopie. — En 1855, M. Puech (1) fit connaître une espèce d'ectopie ovarique par défaut de migration; il l'appella *lombaire*, parce que les ovaires restent à la place qu'ils occupent pendant la dixième semaine de la vie embryonnaire; mais cette variété d'ectopie rentre dans le cas des arrêts de développement dont je viens de m'occuper.

Les autres ectopies, incontestablement les plus nombreuses, sont produites, au contraire, par un excès de migration; elles se confondent avec les hernies ovariennes auxquelles je consacre plus loin un paragraphe. — J'y renvoie le lecteur.

§ II. — Lésions organiques des ovaires.

« La texture éminemment vasculaire, spongieuse, érectile de l'ovaire, dit M. Cruveilhier; le grand développement, eu égard à son volume, de ses vaisseaux et surtout de ses veines; la nature de ses fonctions qui le fait participer si activement à l'orgasme du coït et aux divers troubles auxquels est exposé l'acte de la fécondation; l'âge de retour qui porte principalement sur cet organe : voilà les circonstances principales qui expliquent et la fréquence et le caractère particulier de ses maladies (2). »

Et, en effet, les ovaires ont une remarquable prédisposition à toutes sortes d'altérations anatomiques : « L'on peut assurer sans crainte, dit M. Chereau, qu'il n'y a pas chez la femme un organe qui présente une plus grande variété d'altérations pathologiques que les ovaires : inflammation et ses conséquences, épanchements sanguins, collections purulentes, dégénérescences squirrheuses, encéphaloïdes, fibreuses, stéatomateuses, tuberculeuses, productions mélaniques, cartilagineuses, osseuses, calcaires, déplacements, hernies, etc., tout s'y trouve ; et en outre, ces organes sont quelquefois le siége d'altérations morbides que l'on ne rencontre nulle autre part aussi fréquemment (1). »

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(1) *Comptes rendus de l'Académie des sciences*, 22 octobre 1855.

(2) Cruveilhier, *Anatomie pathologique*, avec planches, 5ᵉ livraison, p. 1.

Le point de départ de tous ces états pathologiques se trouve moins souvent dans le parenchyme de l'ovaire que dans les organes vésiculaires.

Négrier a très-bien décrit la filiation de toutes ces altérations ; depuis cet observateur, la science n'a apporté sur ce point aucun nouveau renseignement ; je dois donc faire connaître au moins quelques conclusions auxquelles est arrivé le médecin d'Angérs.

» 3° Les altérations des vésicules ovariques ont une cause prochaine commune, qui consiste dans un arrêt de développement : ce dernier est complet ou partiel.

» 4° Cette suspension de l'évolution vésiculaire peut déterminer un véritable avortement des vésicules à tous les degrés de leurs transformations.

» 5° Les conséquences de l'avortement complet ou partiel présentent des différences très-grandes sous le rapport de leur gravité.

» 6° Le plus ordinairement, l'avortement complet des ovules et de leurs vésicules ne cause pas d'accidents qui puissent compromettre la vie, et les débris de l'organe disparaissent plus ou moins complétement par la résorption.

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(1) Chereau, *loc. cit.*, p. 93.

» 7° L'avortement complet peut être l'occasion d'une inflammation avec suppuration qui entraîne des conséquences graves.

» 8° L'avortement partiel, c'est-à-dire l'arrêt de développement d'une des parties constituantes d'une vésicule ovarique, détermine une altération plus ou moins profonde dans les fonctions des autres parties de cet organe, et un changement dans leurs rapports réciproques.

» 9° L'avortement incomplet qui a lieu quand les organes vésiculaires ne sont encore qu'à l'état de vésicule primaire, paraît être la cause de la plupart des hydropisies enkystées de l'ovaire.

» 10° Ces mêmes avortements partiels, lorsque les vésicules sont à l'état de bourses grises, sembleraient être l'origine des masses fibreuses, squirrheuses et encéphaloïdes des ovaires.

» 11° L'avortement partiel des organes vésiculaires, quand ils sont à l'état de vésicules *jaunes*, est la source des tumeurs enkystées de l'ovaire, qui contiennent une matière d'apparence butyreuse.

» 12° Enfin, c'est à des cas de fécondation sans séparation de l'ovule de sa vésicule, qu'il faut attribuer l'origine de ces productions fœtales qu'on trouve dans l'ovaire, où elles se développent sous l'influence des adhérences vasculaires qui s'établissent entre elles et les membranes qui les renferment (1). »

On ne doit point espérer trouver ici l'histoire pathologique de chacune de ces affections, à laquelle se refusent les limites de cet ouvrage, bien que la stérilité soit l'effet le plus commun de ces maladies.

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(1) Négrier, *Recherches anatomiques et physiologiques sur les ovaires dans l'espèce humaine*. Paris, 1840, p. 117 et suiv.

Cependant, pour que l'inaptitude à la fécondation soit complète, il faut : 1° que les deux ovaires soient simultanément atteints ; 2° et qu'aucune des parties de leur tissu ne reste intacte.

Si l'un des deux ovaires conserve son intégrité, en supposant son congénère aussi profondément altéré que possible, la femme ne perd aucun des attributs de son sexe, l'ovaire sain pouvant à lui seul déterminer l'hémorrhagie menstruelle et suffire aux nécessités de la conception. Il serait facile, en effet, de rapporter des exemples de fécondation dans des cas où, par suite d'atrophie, de dégénérescence, de déplacement, de hernie ou de toute autre cause, un seul ovaire pouvait émettre d'ovule ; il faut donc, je le répète, que les deux ovaires manquent à la fois ou soient profondément altérés, pour que l'infécondité de la femme soit fatale et absolue.

De plus, l'altération des deux ovaires, pour amener ce résultat, doit encore atteindre toutes les parties du tissu ovarien. Cette condition est indispensable. Morgagni avait déjà fait cette remarque (1), que tous les observateurs qui l'ont suivi ont pleinement confirmée. « On a vu, dit M. Chereau, des femmes atteintes de dégénérescences énormes des deux ovaires, et cependant devenir encore mères ; mais un examen attentif a démontré encore, dans ces cas, qu'une portion de l'un des organes reproducteurs, ou de tous les deux en même temps, était encore saine (2). »

Cette double condition que, pour se produire, la stérilité exige des altérations pathologiques des ovaires, diminue beaucoup, au point de vue où nous sommes placé, l'importance de ces altérations, qui, au premier abord, semblent devoir occuper une si large place dans l'étiologie de l'inaptitude de la femme à la procréation.

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(1) Morgagni, *De sedibus et causis morborum*. Naples, 1762, epist. XLV, art. 17.

(2) Chereau, *loc. cit.*, p. 99.

Tant que cette double exigence n'est pas entièrement remplie, non-seulement les droits de la femme à la fécondation ne sont point abolis, mais encore la fonction menstruelle persiste; celle-ci éprouve, il est vrai, des dérangements notables et de toutes sortes; mais tant qu'une partie du tissu de l'ovaire est capable de sécréter une vésicule Graafienne, l'évolution et l'expulsion de cette vésicule peuvent s'effectuer, comme dans l'intégrité la plus parfaite de l'organe sécréteur et, par suite, la fécondation se produire. C'est ainsi que s'expliquent les cas si nombreux de conception, survenant au milieu des désordres les plus considérables de l'hémorrhagie menstruelle.

Il est bien difficile, pour ne pas dire quelquefois impossible, de déterminer d'une manière précise l'existence des deux conditions de stérilité dont je parle, surtout de celle qui est relative à l'altération totale du tissu de l'ovaire. Les moyens directs que nous possédons pour arriver à ce résultat sont : la palpation des parois abdominales, la percussion, l'auscultation, la mensuration, le toucher vaginal et le toucher rectal. Ce dernier est le plus important de tous, et j'estime que, sans lui, il est presque impossible de porter un diagnostic, je ne dis pas certain, mais seulement probable sur les maladies des ovaires; cependant, qu'on ne fonde pas sur lui de trop hautes espérances, car on aurait dans la pratique de nombreuses désillusions à essuyer. D'abord, toutes les faces de l'ovaire ne peuvent être explorées par le doigt introduit dans le rectum; ensuite, l'organe que rien ne fixe cède sous la pression exercée sur lui et fuit; enfin, sans parler des obstacles ou tout au moins des embarras que crée assez souvent la présence d'une couche plus ou moins épaisse de tissu cellulaire, on ne peut prétendre explorer l'intérieur de l'ovaire, et il faut se contenter d'apprécier seulement les conditions relatives à sa forme, à son volume et à son poids. C'est beaucoup, dira-t-on; sans doute, mais ce n'est pas assez, surtout pour la solution du problème de la stérilité.

Aussi, tout en recommandant d'une manière expresse de ne jamais négliger ce moyen d'investigation, j'estime qu'on ne doit lui accorder qu'un certain degré de confiance, et ne pas en faire la base exclusive de son appréciation.

Je ne dis rien des autres modes d'examen dont les ressources sont encore plus aléatoires que celles du toucher rectal, mais dont il faut cependant tenir compte, ne fût-ce que comme termes de comparaison.

Heureusement nous avons, pour marcher au milieu des ténèbres de cette nuit profonde, un guide à peu près infaillible, et dont le témoignage égale et surpasse, à lui seul, tous les signes fournis par les moyens directs que j'ai énumérés tout à l'heure. — On devine déjà que je veux parler de l'hémorrhagie menstruelle.

Sans doute, et je l'ai reconnu plus haut, il y a des ovulations sans hémorrhagie, et, dans ces cas, alors il semble difficile de décider si l'absence de l'écoulement cataménial tient à une idiosyncrasie ou à une affection des ovaires. D'abord, les faits d'ovulation régulière, sans flux menstruel et avec intégrité de l'organe qui fournit le sang, c'est-à-dire l'utérus, sont beaucoup moins fréquents qu'on ne pense, et doivent être relégués parmi ces rares exceptions qui, si souvent, déjouent la prévoyance la plus ombrageuse; ensuite, quand une hémorrhagie utérine n'accompagne pas le travail d'expulsion de l'ovule, il se produit sur un point de l'organisme, quelquefois même sur l'organisme tout entier, des modifications qui trahissent l'accomplissement de cette importante fonction. Les organes qui, par leurs sympathies ou leur voisinage, ont des relations avec l'appareil génital ressentent les premiers les modifications dont je parle : les seins se gonflent et deviennent douloureux; les lombes sont le siége de tiraillements pénibles, de tranchées, de véritables souffrances; quelquefois l'écoulement sanguin de l'utérus est remplacé par une épistaxis, par une hémorrhagie auriculaire; on assure même l'avoir vu prendre pour théâtre la paume de la main, etc., etc. Quoi qu'il en soit, on peut dire que l'ovulation régulière, c'est-à-dire l'expulsion d'un œuf arrivé à maturité, se trahit constamment par quelque phénomène; que, dans l'état normal, ce phénomène est une hémorrhagie utérine; mais que, cette manifestation venant à manquer par un motif quelconque, il se produit un ensemble de signes sur la portée desquels il est impossible de se méprendre.

En est-il de même dans les cas d'absence ou de suppression hémorrhagiques par suite de l'altération des ovaires? Non, certes non. Si l'hémorrhagie utérine ne s'est jamais montrée, et si cette absence est liée à la non-ovulation, on cherche en vain quelque symptôme révélateur du côté des seins, des lombes ou de toute autre partie de l'organisme. Aussi je suis convaincu, et les faits sont ici d'accord avec la théorie, que les femmes qui ont été fécondées en l'absence du flux cataménial ressentaient toutes, aux époques qui auraient dû être marquées par cet écoulement sanguin, des phénomènes insolites, soit généraux, soit localisés sur un point de l'économie.

Si l'affection des ovaires entraîne la suppression de l'hémorrhagie utérine, l'habitude des menstrues antérieures éloigne la pensée que cette suppression est due à une idiosyncrasie; de plus, la sécrétion, le développement et l'expulsion de la vésicule Graafienne ne se faisant plus par suite de la maladie des ovaires, on ne remarque pas, aux époques menstruelles, les phénomènes insolites que j'ai dit remplacer quelquefois l'hémorrhagie cataméniale, malgré la parfaite intégrité des ovaires.

Comme on le voit, l'absence ou la suppression de l'écoulement menstruel, liées à une lésion des ovaires, ne sauraient être confondues avec l'absence du même écoulement dépendant d'une idiosyncrasie.

Mais, dira-t-on, par cela même que l'hémorrhagie cataméniale est produite par la face interne de l'utérus, ne peut-il pas arriver que, par suite d'un état pathologique, cet organe se refuse à cette hémorrhagie, sans que pour ce motif la fonction ovarienne soit interrompue ou seulement même troublée ? Sans doute, et je reviendrai plus loin sur ce point intéressant, la matrice peut ne pas répondre à l'excitation de l'ovaire qui, lui, sécrète un ovule, le porte à maturité et l'expulse. Nous retombons ici dans les cas d'ovulation sans menstrues, où celles-ci sont remplacées par les phénomènes anormaux dont il a été plus haut question.

Nous sommes donc en mesure de formuler les lois suivantes, qui me paraissent être l'expression la plus exacte de la vérité :

1° L'ovulation régulière, c'est-à-dire la sécrétion, le développement et l'expulsion d'une vésicule Graafienne, peut, dans quelques rares circonstances, se produire sans hémorrhagie menstruelle, et cette absence être le résultat d'une idiosyncrasie. Dans ces cas, où la fécondation est possible, la menstruation est *toujours* trahie par quelque phénomène, soit général, soit local.

2° L'ovulation régulière, c'est-à-dire la sécrétion, le développement et l'expulsion d'une vésicule de de Graaf, peut se produire sans hémorrhagie menstruelle, par suite d'un état morbide de l'utérus. Dans ce cas la fécondation est possible, *eu égard, bien entendu, à la fonction ovarienne*, et la menstruation est *toujours* trahie par quelque phénomène, soit général, soit local.

3° L'ovulation régulière, c'est-à-dire la sécrétion, le développement et l'expulsion d'une vésicule de de Graaf, interrompue ou supprimée par une maladie des ovaires, suspend cu tarit *toujours* l'écoulement cataménial, et cette absence de l'hémorrhagie menstruelle n'est *jamais* remplacée *périodiquement* par un phénomène anormal quelconque.

Si, maintenant, à ces données déduites de la fonction menstruelle on ajoute les signes fournis, soit par les moyens directs énumérés plus haut, soit par les antécédents de la malade, soit par les altérations déjà subies par le reste de l'économie, etc., etc., on arrive à un diagnostic à peu près certain de la stérilité dont le siége est dans les ovaires, dont la cause est une altération de ces organes, et dont, conséquemment, le pronostic et le traitement se confondent avec le pronostic et le traitement de cette altération elle-même.

Je dois donc renvoyer le lecteur à l'histoire pathologique de chacune de ces affections, car je ne puis les admettre dans le cadre restreint de cet ouvrage.

§ III. — Altérations de position des ovaires.

Quand on songe, d'une part, à la multiplicité et à la variété des circonstances qui peuvent entraîner les ovaires loin de la position qui leur est assignée, et d'autre part à l'influence considérable que ces dérangements exercent sur les conditions de la fécondation, on s'étonne de ne pas voir un nombre plus grand de femmes stériles que celui que l'on rencontre. C'est qu'ici encore la prévoyance de la nature a été extrême, et qu'elle a su proportionner la valeur de ses *assurances*, qu'on me passe le mot, à la gravité du danger.

La présence de deux ovaires est tout à la fois une garantie physiologique et une ressource thérapeutique : elle est une garantie physiologique, parce qu'elle double les chances de l'exécution de la fonction confiée à ces organes; elle est une ressource thérapeutique, parce que dans les cas, par exemple, de déplacement d'un des deux ovaires, le poids ou les mouvements de l'autre peuvent ramener le premier dans sa position normale, et lui permettre ainsi de reprendre ses fonctions interrompues.

Quoi qu'il en soit, cette dualité ne crée pas une immunité absolue; de même que nous avons vu précédemment que l'absence, l'atrophie, l'inflammation ou toute autre affection pouvaient simultanément attaquer les deux ovaires, de même ceux-ci peuvent rompre à la fois les rapports qui les unissent aux trompes, et laisser tomber, sans espoir de fécondation, et se perdre dans les profondeurs du bassin, le produit de leur sécrétion.

Ces changements de position sont simples ou compliqués : simples, si l'ovaire, altérant seulement ses rapports anatomiques, reste plus ou moins flottant dans le ventre; compliqués, si l'ovaire, s'engageant dans une ouverture normale ou accidentelle, cesse de nager dans l'abdomen.

Dans le premier cas, il n'y a que *déplacement;* dans le second, il y a *hernie.*

Disons quelques mots de chacune de ces deux manières d'être.

Déplacements des ovaires. — Les déplacements des ovaires se rangent sous deux chefs, selon la cause qui les produit : tantôt ils sont la conséquence d'un état pathologique des ovaires mêmes, et sont déterminés par l'augmentation du volume et du poids de ces organes; tantôt ils sont le résultat d'adhérences avec les parties voisines, et sont amenés et entretenus par la présence de brides ou de toute autre production anormale.

Dans la première variété, le déplacement s'opère de deux manières bien différentes : ou les deux ovaires voient simultanément augmenter leur poids et leur volume, ou un seul est malade pendant que son congénère reste sain. Dans le premier cas, le mécanisme du déplacement est direct ; les deux ovaires quittent leur position par l'effet de leur propre poids; dans le second cas, au contraire, le déplacement est indirect : l'ovaire sain n'abandonne sa place que parce que l'ovaire malade lui imprime un mouvement, soit de traction, soit de bascule.

Dans la seconde variété, les causes du déplacement sont à coup sûr plus nombreuses que dans la première. La mobilité des ovaires flottant dans le bassin, leurs relations avec la masse intestinale non moins mobile qu'eux, et leurs rapports avec une membrane aussi facilement inflammable que le péritoine, expliquent la facilité d'adhérences, causes de semblables déplacements.

L'utérus, dont j'examinerai plus loin les altérations de position, a été accusé à son tour d'entraîner les ovaires dans les mouvements anormaux qu'il exécute, ce qui créerait une troisième variété de l'affection que j'examine. Sans contester la réalité d'un semblable déplacement, je ferai remarquer qu'au point de vue où nous sommes placé, cette cause n'a peut-être pas toute l'importance que l'on serait porté à lui attribuer au premier abord, car l'utérus, en se déplaçant, entraîne tout à la fois la trompe et l'ovaire, et par ainsi, ne doit point altérer les rapports qui unissent ces organes; dans ces cas, les motifs de la stérilité, quand elle existe, se trouvent suffisamment expliqués par le déplacement de la matrice, sans qu'il soit nécessaire d'invoquer un phénomène étrange ou tout au moins douteux.

Quoi qu'il en soit, le diagnostic du déplacement des ovaires, hormis les cas d'augmentation de volume et de poids de ces organes, est toujours difficile et constamment obscur ; la palpation abdominale et le toucher rectal ne fournissent que des données incertaines, et la percussion est à peu près impuissante à trouver et à limiter deux organes que peuvent si facilement lui dérober quelques anses intestinales. L'hémorrhagie menstruelle est souvent, il est vrai, altérée dans son type; mais ces altérations peuvent être rattachées à tant de causes, qu'il ne faut les accepter que comme une ressource essentiellement aléatoire.

Les antécédents de la malade, dans les cas surtout d'adhérences, ont une importance réelle, si l'on réfléchit au mécanisme de ces adhérences qui, presque toujours, succèdent à une péritonite ou à l'inflammation de quelque organe du bassin; c'est ainsi qu'il me fut un jour possible de m'expliquer la stérilité d'une femme qui, deux années avant son mariage, mais après l'établissement de la menstruation, avait eu une phlegmasie intense des ganglions lymphatiques lombaires.

Cette observation est curieuse par la terminaison qui sembla justifier le diagnostic que j'avais porté, et mérite à ce titre de trouver ici une place.

En l'absence de tout autre signe de stérilité, soit du côté du mari, soit du côté de la femme, et m'appuyant exclusivement sur les conséquences qu'avait pu avoir la phlegmasie dont j'ai parlé, je conclus à l'existence de brides, formées entre les ganglions lombaires enflammés et les trompes ou les ovaires, poussés à la rencontre les uns des autres par la pression des intestins et par la position horizontale sur le dos. Je déclarai donc à la malade que je n'avais rien à faire et que tout traitement était superflu.

Velpeau, consulté, se rangea à mon diagnostic et, comme moi, jugea toute médication inutile.

Fleury, qui à cette époque était à la tête de l'établissement hydrothérapique de Bellevue, refusa d'admettre notre manière de voir et crut simplement, quoique les règles fussent régulières et normales, à une atonie des organes de la génération; en conséquence il conseilla une saison à Bellevue.

La malade y passa deux mois sans succès, et finit par se rendre au conseil que Velpeau et moi lui avions donné, c'est-à-dire d'accepter sa stérilité comme un mal irrémédiable, et de renoncer à tout traitement qui ne pouvait que lui être préjudiciable.

Elle rentra donc chez elle, dans le département de l'Eure, et prit son parti d'une infirmité qui déjouait toutes les ressources de l'art.

Pendant l'été suivant, alors qu'elle était à la campagne, la jeune femme, montée sur un arbre, fit une chute sans gravité, mais qui s'accompagna d'une forte commotion et d'une émotion très-vive.

Deux mois après cet événement, les règles se supprimèrent; la femme était enceinte.

Depuis cette époque la fécondité ne s'est pas démentie, et plusieurs accouchements parfaitement normaux ont eu lieu.

Nous avons toujours pensé avec Velpeau que la commotion et l'émotion produites par la chute avaient déterminé la rupture des adhérences, et ramené les ovaires ou les trompes à leur place normale.

Dans cette observation, les antécédents de la malade furent la seule lueur qui m'éclaira; mais dans beaucoup de cas, il faut le reconnaître, les antécédents n'ont par eux-mêmes qu'une importance minime, et laissent l'esprit dans toutes les incertitudes d'un diagnostic excessivement obscur.

Heureusement, cette ignorance ne nous doit point inspirer de grands regrets pour le traitement, car parvînt-on à pénétrer la cause réelle du déplacement, je me demande quelle pourrait être la thérapeutique à employer. Je prévois bien qu'en cas d'adhérences, on peut tenter, par le rectum, de rompre ces adhérences; mais, outre que l'entreprise me paraît difficile, elle expose à des dangers réels la femme qui s'y soumet; j'estime donc qu'il vaut mieux, en ces circonstances, avoir le courage d'avouer son impuissance que de montrer une témérité compromettante tout à la fois pour la science et pour la malade.

Hernie des ovaires. — Cette affection n'est bien connue que depuis que Deneux a consacré à son histoire quelques pages, qui sont encore le meilleur traité sur la matière (1). Cependant la science en possédait quelques observations bien authentiques avant le travail de l'accoucheur français, et il paraît que c'est à Soranus d'Éphèse qu'il faut attribuer l'honneur d'en avoir fait mention le premier. Après quinze siècles d'un mutisme absolu, Bessière, célèbre chirurgien de Paris, attira l'attention sur les hernies des annexes de l'utérus, en signalant un fait qui lui avait montré le pavillon de la trompe de Fallope à côté d'une anse intestinale dans l'anneau inguinal; l'ovaire n'était pas compris dans la tumeur. Ce fut César Verdier, le collaborateur de J.-L. Petit, qui, plus de quatre-vingts ans après la communication de Bessière, fit connaître (2) un fait analogue à celui de Soranus d'Éphèse; enfin, Haller (3), en 1755, en donna une nouvelle observation, qui fut la troisième inscrite dans la science.

A partir de cette époque, les exemples de hernie ovarienne deviennent plus nombreux. En 1757, Percival Pott (4) décrit une hernie inguinale des deux ovaires, dont je parlerai tout à l'heure; Camper (5), Balin (6), Desault (7), Lallement (8),

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(1) Deneux, *Recherches sur les hernies des ovaires*. Paris, 1813.

(2) Verdier, *Dissertation sur les hernies de la vessie*, insérée dans les *Mémoires de l'Académie royale de chirurgie*, t. II, p. 3.

(3) Haller, *Disputat. chirurg. select.* Lausanne, 1755, t. III, p. 313.

(4) Pott, *Œuvres chirurgicales*, trad. franç. Paris, 1792, t. I, p. 492.

(5) Camper, *Demonstrat. anatom.-patholog.*, lib. II, *Circa pelvis humanæ fabricam et morbos*. Amsterdam, in-fol., 1760, p. 17.

(6) Balin, *Art de guérir les hernies*. Paris, 1768.

(7) Desault et Chopart, *Traité des maladies chirurgicales*. Paris, 1779, t. II, p. 325.

(8) Lallement, *Mémoires de la Société d'émulation*, t. III, p. 327.

Lassus(1), Everard Home (2), Murat (3), P.-L. Verdier (4), etc., rencontrent l'ovaire soit dans le canal inguinal, soit à l'anneau crural, soit à l'ouverture ischiatique, soit à une solution de continuité faite accidentellement aux parois de l'abdomen; toutes sont méconnues dans le diagnostic, et constatées seulement sur le cadavre ou après une opération qui met ces organes à nu.

Sous ce dernier rapport et au point de vue spécial qui nous occupe, aucune des neuf observations de hernie de l'ovaire consignées dans la science n'a une valeur égale à celle du fait rapporté dans l'ouvrage de Percival Pott.

Qu'on me permette de reproduire cette observation instructive, la seule qui nous intéresse réellement : « Une fille, dit le chirurgien anglais, âgée de vingt-trois ans, et d'une bonne constitution, entra à l'hôpital de Saint-Barthélemy pour deux tumeurs qui, situées aux aines, lui causaient depuis plusieurs mois des douleurs si vives, qu'elle ne pouvait se livrer à ses occupations ordinaires.

» Cette fille, vigoureuse, d'une bonne santé et bien réglée, avait le ventre libre et n'éprouvait d'autre incommodité que celle qui résultait de la compression des tumeurs lorsqu'elle se baissait, ou que, par d'autres mouvements, elles se trouvaient gênées. D'ailleurs, elles étaient sans inflammation, molles, inégales à leur surface, très-mobiles et placées à l'extérieur des orifices tendineux des muscles costo-abdominaux.

» Les saignées, les purgatifs et les tentatives de réduction faites par plusieurs chirurgiens ayant été sans effet, on se détermina à l'opération. La peau étant divisée, on découvrit un sac membraneux et mince, dans lequel on trouva un corps si ressemblant à un ovaire qu'il était impossible de le prendre pour autre chose; on fit la ligature près de l'anneau et on le coupa. La même opération fut pratiquée de l'autre côté et l'on découvrit absolument la même chose, tant en opérant qu'en examinant les parties extirpées.

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(1) Lassus, *Pathologie chirurgicale*. Paris, 1809, t II, p. 101.

(2) Denman (Thomas), *Introduction à la pratique des accouchements*, trad. franç. par Kluyskens. Gand, 1802, t. I, p. 147.

(3) Murat, *Dictionnaire des sciences médicales*, art. OVAIRE, t. XXXIX, p. 35.

(4) P.-L. Verdier, *Traité pratique des hernies, déplacements et maladies de la matrice*. Paris, 1840.

» Depuis lors, la femme jouit d'une bonne santé; mais ses seins s'affaissèrent, les règles ne vinrent plus, et à la place de l'embonpoint qui diminua, il s'établit une prédominance virile du système musculaire (1). »

Des neuf observations de hernie ovarienne que la science possédait à l'époque de la première édition de ce livre, mais dont le nombre a bien augmenté depuis ce temps, trois seulement se rapportent au déplacement simultané des deux ovaires : celle de Percival Pott, que l'on vient de lire; celle de Desault, qui trouva dans le même sac la matrice, les deux trompes et les deux ovaires; enfin, celle de Murat, qui rencontra dans une hernie crurale l'utérus, ses appendices et une partie du vagin.

Le déplacement que j'examine ici paraît n'exercer aucune modification sur la vitalité des ovaires. La femme opérée par Percival Pott avait continué à être bien réglée, malgré la présence de ses deux tumeurs inguinales; et la turgescence dont ces organes sont le siége aux époques menstruelles, bien que niée par quelques chirurgiens modernes (2), a été notée sur les ovaires herniés par Mauriceau, Littre, Deneux, sur le cadavre, et par P.-L. Verdier sur le vivant.

Ce n'est donc pas en suspendant le travail physiologique de l'ovaire que la hernie de celui-ci met obstacle à la fécondation.

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(1) Percival Pott, *loc. cit.*

(2) Voyez la thèse de M. Loumaigne sur les *hernies des ovaires*, Paris, 1869, inspirée par M. Dolbeau.

La cause de cet obstacle est purement mécanique ; elle se trouve dans la rupture des rapports topographiques qui unissent l'ovaire et la trompe. Dans le cas où l'un et l'autre sont compris dans le sac, il peut arriver que la trompe s'applique encore sur l'ovaire ; alors l'obstacle à la fécondation se trouve dans la courbure ou l'étranglement qui comprime la trompe à l'anneau, et qui s'oppose au passage de l'ovule.

Ces explications, on doit le comprendre, sont purement hypothétiques ; mais je me suis déjà peut-être trop arrêté à une affection dont la rareté, surtout avec les conditions indispensables à la production de la stérilité, c'est-à-dire la hernie double des ovaires, me commandait plus de réserve et plus de brièveté.

§ IV. — Corps étrangers des ovaires.

Je n'entreprendrai point ici l'énumération fastidieuse de toutes les productions qui ont été rencontrées dans les ovaires, parce que l'influence qu'elles exercent sur la faculté génératrice est identiquement la même que celle des lésions organiques étudiées plus haut. L'histoire de ces productions, presque toujours enfermées dans des kystes, rentre pour nous dans l'histoire des kystes de l'ovaire (1), et, d'une manière plus générale, dans l'histoire antigénésique des lésions organiques de ces organes. C'est donc au paragraphe II de ce chapitre que je dois renvoyer le lecteur.

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(1) Voyez Péan, *Ovariotomie;* Paris, 1869, grand in-8. — Boinet, *Traité pratique des maladies des ovaires*, Paris, 1867, in-8 ; — et surtout L. Gallez, *Histoire des kystes de l'ovaire*, Bruxelles, 1873, grand in-4, avec planches, contenant tout ce qui se rattache à cette question intéressante.

TITRE II. — ÉTAT PATHOLOGIQUE DE L'OVULE.

Ce que j'ai fait pour le produit de la sécrétion spermatique (1) je dois le faire ici pour le produit de la sécrétion ovarienne, c'est-à-dire établir les états pathologiques de l'ovule capables d'empêcher soit son imprégnation, soit son développement pendant la vie intra-utérine.

Les obscurités que j'ai rencontrées dans l'histoire morbide du zoosperme sont peut-être plus grandes encore dans l'histoire morbide de l'ovule; celui-ci, en effet, trouve, comme le spermatozoïde, dans l'organisme qui le produit des causes de débilité ou de mort; ensuite, de plus que le spermatozoïde, il est exposé à recevoir de l'élément mâle des germes de dépérissement; et enfin ne pouvant, comme au début, persister à se suffire à lui-même, et forcé de demander à l'utérus la sustentation et la vie, il subit fatalement l'influence de cet organe et éprouve plus ou moins le contre-coup de ses maladies.

L'ovule puise donc à trois sources les causes de son dépérissement :

1° En lui-même;

2° Dans le zoosperme qui lui communique la vitalité;

3° Dans l'utérus, auquel il demande asile et nourriture.

Nous avons vu déjà les germes d'affaiblissement et de mort que le spermatozoïde peut apporter à l'ovule (2); nous n'y reviendrons pas à cette heure.

Plus loin, en parlant des troubles de la gestation, nous devrons dire les conditions défavorables que l'ovule peut rencontrer dans l'utérus, et en nous y arrêtant ici nous ferions double emploi avec ce chapitre.

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(1) Voyez la page 631.

(2) Voyez la page 634.

Il ne reste donc plus en cette place qu'à examiner les causes d'affaiblissement et de mort que l'ovule porte en soi-même.

Ces causes peuvent s'adresser ou à l'embryon ou à la vésicule qui le renferme.

A. *Maladies de l'embryon.* — L'arrêt ou l'absence de développement de l'embryon peuvent être occasionnés par une maladie des ovaires, par une maladie de l'ovule, par une irritation mécanique de ce dernier, par un état morbide général de la mère, ou par des circonstances que l'on ne peut souvent pas apprécier.

Au point de vue des ovaires, on ne peut contester que tout ce qui diminue leur nutrition n'affaiblisse la vitalité de leur produit, et qu'avant d'arriver à une atrophie complète ces glandes n'émettent des ovules dont les embryons ne peuvent supporter les métamorphoses auxquelles ils sont destinés. M. Delpech insiste sur les avortements presque toujours certains des ouvrières employées dans les fabriques de caoutchouc soufflé ; et j'ai moi-même souvent noté de fausses couches chez des femmes soumises, pendant quelque temps, à la médication iodée.

Sous le rapport de l'ovule, je dirai tout à l'heure les maladies qui l'affectent et qui, en altérant les conditions anatomiques et physiologiques des enveloppes protectrices de l'embryon, entraînent fatalement le dépérissement et la mort de celui-ci.

Au point de vue de la mère, en laissant de côté les affections des ovaires dont je viens de parler, je ne connais que les maladies diathésiques et héréditaires, qui impriment au produit ovarien soit un affaiblissement, soit un mode particulier de vitalité. Dans l'état actuel de la science, et en ne tenant compte que de l'ovule, il est impossible de déterminer pourquoi, par exemple, une syphilitique fait une fausse couche, tandis qu'une autre, dans des conditions identiques, porte à terme un embryon sain ou contaminé.

Ici, pour le dire en passant, se dresse la question de l'hérédité, question immense, et d'autant plus ardue que les lois qui la régissent sont constamment traversées par les accidents les plus imprévus et les plus bizarres.

Je ne puis ni ne dois aborder ici un semblable problème, et je reviens à l'embryon.

Quand celui-ci est frappé de mort, il se retrouve rarement dans les eaux de l'amnios; il est dissous ou résorbé, et l'ovule est bien réellement alors un œuf afœtal. Velpeau (1) et Breschet (2) ont trouvé plusieurs fois l'œuf comme une poche pleine d'un liquide albumineux, limpide et filant.

La disparition de l'embryon n'entraîne pas toujours la chute de l'ovule; celui-ci, quand ses membranes sont intactes, peut continuer son développement et faire croire à une grossesse qui n'est qu'une fausse grossesse ou grossesse afœtale; quelquefois l'ovule dégénère, tout en se développant, et donne naissance à ce qu'on nomme un *mole;* enfin la rétention prolongée d'un ovule sans embryon détermine l'hydrométrie ou hydropisie de l'utérus.

Maladies de l'ovule. — Les enveloppes d'un œuf, ou embryonnaire ou afœtal, peuvent être affectées de dégénérescence hydatique ou graisseuse, d'hydro-amnios, d'épanchements de liquide séreux entre le chorion et l'amnios, entre les deux caduques, d'hémorrhagies interstitielles, etc.

Cette dernière lésion paraît la plus fréquente, quoique personne jusqu'ici n'ait fait une étude spéciale des maladies de l'ovule.

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(1) Velpeau, *Embryologie ou ovalogie humaine*. Paris, 1833.

(2) Breschet, *Études anatomiques, physiologiques et pathologiques de l'œuf dans l'espèce humaine*. Paris, 1835.

Cependant Cazeaux dit : « Des épanchements de sang peuvent également se faire entre les divers plans membraneux qui constituent l'œuf (1). »

Deneux a trouvé de ces épanchements dans la cavité même de la caduque et du chorion, entre le chorion et l'amnios.

M. Courty (2) cite une observation qui lui avait été communiquée par le professeur Dubreuilh, et dans laquelle l'épanchement s'était fait entre le chorion et l'amnios.

Enfin M. Degranges rapporte une observation à peu près semblable à celle de M. Courty, et de laquelle il tire, au point de vue pathologique, les conclusions suivantes : « On trouve un épaississement très-marqué de toutes les enveloppes de l'embryon qui se sont réunies, comme *feutrées*, peut-être avec quelques éléments du tissu placentaire. Cet épaisissement est tel, qu'à la première vue on croirait avoir à examiner un petit *utérus* plutôt qu'un œuf humain.

« Cet épaississement est incontestablement de *nature inflammatoire*, plus ou moins aiguë, comme le démontre la rougeur des membranes *épichoriale* et *choriale*, et l'arborisation sanguine de la membrane amnios tout entière » (3).

Ces altérations des enveloppes de l'ovule empêchent l'œuf de suivre son développement normal : tantôt l'embryon disparaît, comme je l'ai dit plus haut, et alors la fausse couche a lieu dans les trois premiers mois de la fécondation ; tantôt l'embryon va jusqu'à un développement qui ne lui permet pas d'être absorbé, et alors la fausse couche se fait plus ou moins tardivement, dans les conditions connues de tout le monde.

Plus loin, en parlant des troubles de la gestation, je reviendrai sur cette cause d'avortement précoce, et j'indiquerai, dans une vue d'ensemble, les précautions que les femmes doivent prendre pour amener à terme le fruit de la conception.

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(1) Cazeaux, *Traité des accouchements*. Paris, 1870.

(2) Courty, *De l'œuf humain et de son développement dans l'espèce humaine*. Paris, 1845, p. 156.

(3) Degranges, *Union médicale de la Gironde*, octobre 1858, p. 441.

TITRE III. — TROUBLES DE LA FONCTION TUBAIRE.

Si l'on réfléchit au rôle important que la trompe utérine joue dans le mécanisme de la génération, et à l'étroitesse du canal qui la constitue, et par lequel passe l'ovule, on comprendra de quelle valeur doivent être, au point de vue où nous sommes placé, les moindres altérations de cet organe. Cependant, ainsi que je l'ai déjà fait remarquer pour les testicules et les ovaires, les chances fâcheuses que créent de semblables conditions anatomiques et pathologiques, sont diminuées de moitié par le fait seul de la duplicité de l'appareil. De plus, leur position dans les profondeurs de la cavité abdominale met les trompes à l'abri des violences extérieures, tout en les exposant, il est vrai, par la mobilité dont elles doivent jouir pour remplir leurs fonctions à des déplacements dont on a déjà pu se faire une idée par ce que j'ai dit plus haut des déplacements des ovaires.

Cette situation des trompes dans l'abdomen et les rapports intimes qu'elles entretiennent avec le péritoine, l'utérus et les ovaires constituent des obstacles presque insurmontables au diagnostic de leurs maladies : leur position les soustrait à nos moyens directs d'investigation ; et leurs rapports de voisinage mêlent, dans une symptomatologie commune, les signes de leurs lésions avec ceux des affections péritonéales, utérines ou ovariennes.

Cependant je ne veux pas dire d'une manière absolue que les trompes ne puissent pas être malades *essentiellement* : mais, qu'elles le soient seules ou consécutivement à l'affection d'un organe voisin, le diagnostic de leurs lésions est entouré de tant de mystères et leur traitement de tant de difficultés, que leur histoire se réduit pour ainsi dire à quelques faits d'anatomie pathologique.

Je ne rappellerai ici que les plus importants.

§ I. — Vices de conformation des trompes utérines.

L'anomalie porte tantôt sur la totalité, tantôt sur une partie des trompes.

Absence. — L'absence complète des oviductes est un fait assez rare; quand on l'a rencontrée, elle coïncidait toujours avec l'absence ou un arrêt de développement de l'utérus; il en doit être nécessairement ainsi, puisqu'au début, les trompes et la matrice ne forment qu'un seul organe, les *canaux de Müller*. Quelquefois, plus rarement, on constate aussi l'absence des ovaires et des ligaments utérins; mais, dans tous les cas, si les trompes manquent des deux côtés, la stérilité est absolue et irremédiable. Si au contraire l'absence n'est qu'unilatérale, la fécondation est possible, comme il y en a des exemples.

Développement rudimentaire. — Sous cette dénomination Scanzoni comprend plusieurs anomalies : « On désigne, dit-il, sous le nom de *développement rudimentaire* des oviductes une anomalie telle, que de l'un ou des deux côtés de l'utérus on ne rencontre qu'un rudiment des trompes plus ou moins grand, tantôt fermé, tantôt ouvert à son extrémité extérieure. Il faut faire rentrer dans la même catégorie les restes de ces organes que l'on rencontre quelquefois dans le voisinage des ovaires en l'absence complète de l'utérus, ainsi que le développement insuffisant du parenchyme des trompes, avec le peu d'épaisseur des parois de cet organe, qui en est la conséquence. Il faut enfin aussi désigner sous le nom de développement rudimentaire la trop grande étroitesse de tout le canal, la longueur inégale des deux oviductes, qui accompagne fréquemment une semblable anomalie des ligaments larges de la matrice (1). »

M. Puech a observé un exemple de cette dernière anomalie chez une femme mariée depuis dix ans et restée stérile, dont la trompe droite avait la longueur ordinaire, 14 centimètres, tandis que la gauche n'avait que 6 centimètres.

Conformations vicieuses. — Il faut placer au nombre des anomalies qui empêchent la fécondation les rétrécissements qui existent sur quelques points de la trompe et qui font obstacle au passage de l'ovule, soit par eux-mêmes, soit par l'oblitération qu'ils déterminent en facilitant l'accumulation du mucus au-dessus et au-dessous d'eux; « mais, *dit* M. Courty, c'est surtout le pavillon qui est sujet à une foule de variétés : tantôt l'évasement du canal tubaire au niveau de l'extrémité abdominale est peu considérable, et son ouverture est entourée de franges très-courtes; tantôt le pavillon, considérablement élargi, forme en bas une espèce de canal qui est en communication intime avec l'ovaire et dont les bords sont munis de larges franges (2). »

Je ne parle pas des pavillons surnuméraires qui n'empêchent ni la fécondation ni le passage de l'ovule.

Ectopies. — Schiller, Voigt, Mayer, Scholler et Bérard rapportent des cas de hernie de la trompe seule; ces faits constituent des exceptions dans l'histoire des ectopies des oviductes. Presque toujours ceux-ci suivent les ovaires dans leur migration; par conséquent ce que j'ai dit des ectopies des ovaires s'applique à celles des trompes.

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(1) Scanzoni, *Traité pratique des organes sexuels de la femme*. 1858, p. 310.

(2) Courty, *Traité pratique des maladies de l'utérus*. 2ᵉ édit., 1870, p. 79.

§ II. — Lésions organiques des trompes utérines.

Rupture de la trompe utérine. — En dehors des grossesses tubaires, par l'action desquelles on comprend très-bien que les trompes se crèvent, on s'est demandé si une rupture se pouvait produire sur ces organes. La science n'en possède qu'un exemple dû à Godelle (1), et dont l'intérêt est tout entier dans les détails d'anatomie pathologique, car une mort rapide est la conséquence nécessaire de cet accident.

Oblitération des trompes de Fallope. — L'oblitération complète ou incomplète, mais suffisante cependant pour intercepter le passage de l'ovule est, de toutes les affections des trompes utérines, celle qui a été le plus communément observée sur le cadavre.

C'est que des causes nombreuses et de nature fort différente peuvent amener ce résultat. Tantôt, comme pour l'épididyme, l'inflammation est le point de départ d'une matière plastique qui réunit l'une à l'autre les parois du canal ; tantôt c'est à un détritus cancéreux ou tuberculeux qu'il faut attribuer l'obstacle ; tantôt c'est le produit d'une grossesse tubaire qui est la cause de l'oblitération ; quelquefois même celle-ci est simplement due à la présence de mucosités résultant d'un état catarrhal de l'organe ; et enfin dans d'autres circonstances l'oblitération est due à la compression qu'exercent sur les trompes des tumeurs pelviennes de toute nature.

La science possède des exemples de chacun de ces genres d'obstruction, et il me serait facile d'en faire passer un certain nombre sous les yeux de mes lecteurs. Mais quel enseignement pratique retirerions-nous de cette exhibition anatomo-pathologique ? Tout le monde comprend, sans que j'y insiste davantage, l'influence néfaste qu'exerce fatalement sur la génération l'oblitération des deux trompes utérines, et l'histoire des faits nécroscopiques ne nous apprend malheureusement pas grand'chose sur la symptomatologie de cette affection.

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(1) Godelle, *Hémorrhagie par une des trompes utérines*, (*Nouvelle bibliothèque médicale*), Paris, 28, t. I, p. 261.

De plus, comme je le faisais remarquer plus haut, les maladies des organes voisins avec lesquels les trompes ont des relations pathologiques si étroites, que beaucoup d'auteurs nient qu'elles puissent être affectées isolément; les maladies des organes voisins, dis-je, masquent les signes propres aux lésions tubaires, et ce n'est que par une espèce d'intuition que celles-ci peuvent être soupçonnées sur le vivant.

Cependant un chirurgien anglais, Tyler Smith, s'appuyant sur la méthode d'exclusion, croit être parvenu, sinon à diagnostiquer certainement l'oblitération des trompes, du moins à acquérir certaines présomptions relativement à son existence ; fort de cette espèce d'instinct, secondé par l'expérience, il est allé même plus loin, et il a eu la prétention, bien souvent conçue avant lui, de pratiquer le cathétérisme, et par conséquent la désobstruction des trompes de Fallope.

Je comprends que l'on puisse arriver, dans certains cas éclairés par des renseignements de toutes sortes, à diagnostiquer d'une manière plus ou moins certaine l'oblitération des trompes; mais vouloir sur le vivant introduire une sonde dans ces mêmes trompes, la prétention me paraît exagérée; si l'entreprise réussit, je crois qu'il en faut rapporter tout l'honneur au hasard.

Quoi ! sur le cadavre et l'utérus étant ouvert on ne parvient pas sans peine à faire entrer un corps étranger dans les trompes, et l'on veut que, sur le vivant, cette opération soit possible autrement que par l'effet du hasard, au milieu des variations de forme, de longueur et de position de la matrice, si difficilement appréciables pendant la vie, et dont la détermination me semble pourtant nécessaire pour arriver exactement à l'ouverture supérieure des trompes.

Je m'abuse peut-être sur les difficultés de l'opération, car Tyler Smith a fait construire des sondes avec lesquelles, assure-t-il, il est non-seulement parvenu jusqu'aux trompes, mais encore il a débarrassé ces organes des matières qui les obstruaient, et il a rendu ainsi la fécondité à des femmes qui en étaient privées.

J'ignore si Tyler Smith, qui a publié un bon ouvrage sur ce sujet (1), continue à Londres de pratiquer avec succès le cathétérisme des trompes de Fallope; mais je sais qu'en France personne ne s'est fait le champion d'une pratique dont l'expérience a depuis longtemps montré l'inanité et les dangers.

Cette conclusion est d'autant moins consolante que l'art est complétement désarmé contre de semblables affections, et qu'il nous faut remettre à la nature le soin exclusif d'une guérison devenant, par cela même, plus que problématique.

§ III. — Adhérences des trompes utérines.

Des adhérences se font quelquefois entre diverses courbures des trompes, comme il arrive aux circonvolutions de l'intestin à la suite d'une péritonite; dans ce cas, il résulte soit des raccourcissements, soit des déformations de l'oviducte, qui diminuent et oblitèrent même l'intérieur du canal.

Dans d'autres circonstances l'adhésion des trompes se fait avec la face postérieure de l'utérus ou tel autre point voisin, plus ou moins éloigné de l'ovaire.

Les causes les plus ordinaires de ces adhérences sont les maladies qui atteignent principalement l'enveloppe séreuse : l'inflammation péri-utérine, la péritonite pelvienne, la péri-métrite, l'hématocèle, etc. Dans une observation citée plus haut (1) j'ai rapporté le fait d'une adhérence consécutive à l'inflammation des ganglions lombaires.

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(1) Tyler Smith, *Parturition and the principles and practice of obstetrics*. London, 1849, in-12.

Mais quel que soit le point de départ de ces adhérences, la stérilité est absolue, parce que, les rapports de l'oviducte et de l'ovaire étant changés, le pavillon ne peut plus embrasser la vésicule de de Graaf, arrivée à maturité, ni par conséquent recevoir l'ovule.

L'art est désarmé devant un pareil accident; le hasard seul peut quelquefois rompre l'adhérence, ainsi qu'il est advenu dans l'observation que je rappelais tout à l'heure.

§ IV. — Déplacements des trompes utérines.

En parlant de la hernie des ovaires, j'ai indiqué l'observation de Bessière, dans laquelle le pavillon seul de la trompe fut trouvé à côté d'une anse d'épiploon, et celles de Desault et de Murat, dans lesquelles l'utérus et ses annexes occupaient le sac.

Je ne reviendrai pas sur ces divers faits, et je rappellerai que M. Dolbeau a présenté en 1854, à la *Société anatomique*, une observation analogue à celle de Bessière, et que le secrétaire de cette Société, Bauchet, a résumée de la manière suivante : « Une malade était entrée, dit-il, dans le service de Velpeau, avec une tumeur rouge fluctuante dans le pli de l'aine, au niveau du canal inguinal, tumeur parfaitement irréductible et qui fut incisée. Il s'écoula du pus; puis, deux jours après, survint une péritonite qui enleva promptement la malade. On trouva à l'autopsie cette poche purulente qui s'était formée dans un sac herniaire; dans ce sac, la trompe qui portait elle-même un kyste de son pavillon. A l'ouverture intra-abdominale du canal inguinal se trouvait l'ovaire qui ne s'était pas hernié (1). »

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(1) Voyez la page 652.

Les considérations que j'ai présentées plus haut sur les déplacements et les hernies des ovaires s'appliquent exactement aux déplacements et aux hernies des trompes, et me dispensent par conséquent de m'étendre davantage sur des affections dont l'anatomie pathologique retire à peu près seule tous les enseignements.

TITRE IV. — TROUBLES DE LA FONCTION CATAMÉNIALE.

Dans l'ordre naturel, la femme ne commence à être apte à la génération qu'après avoir vu s'établir une hémorrhagie périodique par la vulve, et elle ne conserve cette aptitude que tout le temps que cette hémorrhagie se reproduit régulièrement chaque mois.

Il n'en pouvait être autrement, puisque cette hémorrhagie est produite par le travail ovarien qui expulse un ovule de la vésicule de de Graaf.

En s'appuyant sur quelques faits exceptionnels de fécondation en l'absence de toute hémorrhagie périodique, on s'est demandé s'il y avait bien réellement une liaison de cause à effet entre l'acte ovarien et la ménorrhagie, et si le premier ne pouvait pas s'opérer sans être trahi par une perte de sang révélatrice.

On doit hardiment répondre par la négative et affirmer que l'ovulation comprend, ainsi que je l'ai dit dans l'introduction préliminaire : 1° l'acte ovarien, qui est la sortie de l'ovule; 2° l'acte tubaire, qui est le transport de l'ovule depuis l'ovaire jusqu'à la matrice ; 3° l'acte cataménial, qui est la transformation de la muqueuse utérine, à l'effet de retenir et de nourrir l'ovule fécondé.

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(1) *Moniteur des hôpitaux*, 1er mai 1855.

La nature a tout prévu et n'a rien abandonné au caprice de l'homme.

Cependant il peut se faire :

Ou que le travail ovarien ne détermine qu'une faible excitation de l'appareil génital, et qu'au lieu d'amener un état congestif il ne produise qu'un simple *molimen ;*

Ou que, par une de ces bizarreries non encore expliquées de la nature, l'excitation résultant du travail ovarien se fasse sentir sur un organe voisin ou éloigné de l'appareil génital, et y détermine la congestion et par suite l'hémorrhagie dont l'utérus est ainsi privé.

Mais l'imprégnation ne saurait être compromise, puisque l'ovule, expulsé de la vésicule, est amené là où doit avoir lieu sa rencontre avec le spermatozoïde.

Quant à la gestation pour laquelle la muqueuse utérine n'est pas préparée par la congestion qui d'ordinaire accompagne l'acte ovarien, la nature en prend soin et recourt à une de ces ressources ingénieuses dont nous sommes témoins dans certains vices de conformation et dans l'évolution des états morbides.

Mais, je le répète, la fécondation n'est pas possible en dehors de la perte de sang périodique par la vulve, appelée *ménorrhagie*, remplacée quelquefois soit par ce qu'on nomme le *molimen hémorrhagicum*, soit par des hémorrhagies, dites *supplémentaires* et qui peuvent se produire par le nez, par l'anus, par les yeux, par les oreilles et même par quelques points de l'enveloppe tégumentaire.

Ce sont des faits dont, sans doute, il faut tenir compte dans la pratique ; mais ils sont trop exceptionnels pour infirmer la règle admise aujourd'hui par tous les physiologistes.

Les menstrues jouent donc un rôle considérable dans la vie génitale de la femme ; aussi on s'est demandé s'il n'existait pas une relation entre l'activité menstruelle et l'activité de la fonction génésiaque, tant au point de vue procréateur qu'au point de vue de la copulation.

Négrier, dont les travaux ont élucidé beaucoup de points de l'anatomie et de la physiologie des ovaires, subordonne complétement la durée de la vie menstruelle et l'abondance du flux à l'activité fonctionnelle de l'ovaire. D'après ses observations, une menstruation hâtive est toujours suivie d'une ménopause tardive, parce que l'ovaire est doué d'une vitalité qui hâte au début et retarde à la fin son fonctionnement. Cet excès de vitalité se traduit tout à la fois par une augmentation de volume de l'organe, par une hémorrhagie cataméniale plus abondante et par un ensemble de phénomènes généraux et particuliers qui constitue le tempérament génital que Négrier propose d'appeler désormais *tempérament ovarien* (1).

Je n'ai pas à revenir ici sur ce que j'ai dit ailleurs relativement à l'influence des ovaires sur le sens génital ; je dois en cette place n'envisager que les relations existantes entre les ovaires et la menstruation, pour savoir si les altérations de cette dernière sont un signe certain des altérations des premiers.

Les troubles de la menstruation sont :

1° L'absence des règles, dite *aménorrhée ;*

2° La difficulté de l'écoulement des règles, avec douleurs, nommée *dysménorrhée;*

3° L'abondance excessive des règles, appelée *ménorrhagie ;*

4° La déviation des règles ou les règles supplémentaires que Raciborski propose de nommer *ataxie menstruelle*.

Ni la dysménorrhée, ni la ménorrhagie, ni l'ataxie menstruelle ne doivent nous arrêter, puisqu'aucun de ces états pathologiques de la femme ne met obstacle soit à la copulation, soit à la fécondation.

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(1) Négrier, *Recueil de faits pour servir à l'histoire des ovaires*, etc. Angers, 1858.

Il nous reste l'aménorrhée, qui doit un instant fixer notre attention.

Raciborski, dont les travaux sur la menstruation font autorité (1), place le point de départ de l'aménorrhée quelquefois dans l'utérus, mais le plus souvent dans l'ovaire.

Dans l'aménorrhée utérine la conception est possible, car l'ovulation n'est pas suspendue : « Dans cette variété, dit Raciborski, l'ovulation est en exercice, elle s'annonce même souvent par des symptômes périodiques de molimen menstruel, mais l'utérus ne répond pas à cet appel et ne se congestionne pas. Cet état peut durer toute la vie, comme aussi la menstruation peut finir par s'établir, surtout à la suite du mariage, ou après des couches, etc., etc., car une semblable disposition de l'utérus n'est pas du tout incompatible avec la conception (2). »

Il ne faudrait pas croire qu'une diminution de vitalité de la muqueuse utérine empêche seule la chute de l'épithélium ; le même résultat est produit par l'excès contraire, par une exaltation de la sensibilité génitale ; les jeunes filles ou les jeunes femmes dont l'impressionnabilité est extrême, sont aussi mal réglées que les jeunes filles ou les jeunes femmes chlorotiques ou anémiques ; mais chez les unes comme chez les autres il se manifeste à chaque époque menstruelle des phénomènes généraux et locaux qui ne laissent aucun doute sur le travail, et qui distinguent toujours les aménorrhées dont il me reste à parler.

L'absence ou l'atrophie des ovaires, congénitales ou acquises, sont toujours et fatalement accompagnées de l'absence du flux menstruel et en même temps, comme je l'ai dit plus haut, d'une stérilité radicale et absolue. Les observations, confirmées par l'autopsie, sont aujourd'hui trop nombreuses pour que le doute puisse être permis. J'ai rappelé plus haut (1) le fait de Parcival Pott dans lequel, les deux ovaires ayant été enlevés, la femme non-seulement ne revit plus ses règles, mais prit quelques caractères de masculinité; cependant Storer rapporte deux cas de persistance des menstrues après l'ablation des deux ovaires ; dans un de ces cas même, l'utérus avait été enlevé en même temps ; il ne restait que la portion vaginale du col sous forme de bouton charnu, de laquelle provenait l'hémorrhagie (2).

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(1) Raciborski, *Du rôle de la menstruation dans la pathologie et la thérapeutique*. 1856, 1 vol. in-8. — *Traité de la menstruation*, 1868, 1 vol. in-8.

(2) Raciborski, *Traité de la menstruation*, p. 571.

Ces faits sont trop exceptionnels pour infirmer la règle; il faut dire avec Storer que ce phénomène est semblable à la dernière oscillation d'un pendule, quand la force impulsive qui le mettait en mouvement a cessé d'exister.

L'altération profonde des follicules à la suite ou d'une affection directe des ovaires, ou de quelque grave atteinte de l'économie, comme, par exemple, dans la période avancée de la phthisie tuberculeuse, a sur l'existence du flux menstruel la même influence que l'absence ou l'atrophie des ovaires; on comprend qu'il en doit être ainsi, puisque l'organe de l'ovulation a disparu.

Dans ces cas l'aménorrhée est au-dessus des ressources de l'art, et la fécondation radicalement impossible.

Heureusement toutes les suspensions de règles n'ont pas cette gravité, et il faut reconnaître que le plus grand nombre est sous la dépendance d'un affaiblissement de l'activité fonctionnelle des ovaires.

Assez généralement cet affaiblissement est lié aux conditions générales de l'économie, comme pendant les maladies aiguës et leur convalescence, dans les anémies, la ***chlorose***, en un mot dans tous les états caractérisés par l'appauvrissement du sang et l'asthénie.

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(1) Voyez la page 655.

(2) Storer, *De la menstruation sans ovaires* (*Archives générales de physiologie*, mai-juin 1868).

Ces états, qui portent leur influence déprimante sur la fonction des ovaires, se font également sentir sur l'utérus, et empêchent la chute de l'épithélium à la suite de laquelle se produit l'hémorrhagie. L'aménorrhée utérine est donc alors une complication de l'aménorrhée ovarique fonctionnelle, mais complication heureusement peu redoutable, puisque le traitement de l'une se confond avec le traitement de l'autre.

Dans quelques circonstances, d'après Raciborski, cette dépression vitale ne serait plus consécutive à des états morbides généraux, mais serait locale et primitive, c'est-à-dire ***idiopathique***. « C'est une espèce de torpeur, dit-il, qui frappe plus ou moins directement l'ovulation, sans aucune maladie préalable. L'aménorrhée qui en résulte peut être plus ou moins longue ; lorsqu'elle n'est que commençante et que tout porte à croire qu'elle ne doit pas être de longue durée, elle constitue ce qu'on appelle vulgairement *des retards* (1). »

Dans toutes ces circonstances l'établissement ou le rétablissement des menstrues est possible, et avec leur retour apparaît l'aptitude à la fécondation.

L'attention du praticien se portera donc sur les moyens capables de relever les forces générales, et de rendre par elles assez d'énergie à la fonction ovarienne, pour qu'une vésicule arrive à maturité, se rompe et émette un ovule, conditions indispensables pour la menstruation et la fécondité.

Je ne dois pas m'étendre davantage ici sur un sujet qui forcément revient si souvent sous la plume, quand on traite de la stérilité chez la femme ; je n'ai dû, en cette place, qu'indiquer les traits généraux des troubles de la fonction cataméniale, dont les détails se trouvent dans l'histoire des troubles de la fonction ovarienne, et dans celle des troubles de la fonction utérine. Je renvoie le lecteur à l'une et à l'autre.

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(1) Raciborski, *Traité de la menstruation*, Paris, 1868, p. 573.

CHAPITRE II

TROUBLES DE LA RÉCEPTION SPERMATIQUE.

Je n'examinerai dans ce chapitre que les affections du col de l'utérus. Pour être logique jusqu'au bout, je devrais aussi passer en revue celles du corps de cet organe, car le sperme ne fait que traverser le col, et est réellement reçu dans la cavité de la matrice.

Mais outre que, dans cet acte de réception, le rôle le plus difficile est dévolu au col, le corps de l'utérus accomplit plusieurs autres missions sur lesquelles je dois m'arrêter plus loin, de telle sorte que je crois préférable, et pour le lecteur et pour moi, de réserver pour un seul cadre, qui sera le chapitre suivant, toutes les affections du corps et du fond de la matrice, et de n'admettre dans celui-ci que les lésions seules du col.

§ I. — Vices de conformation du col de l'uterus.

Absence du col de l'utérus. — Ce vice de conformation se présente toujours avec l'absence du corps de la matrice ; on ne comprend pas qu'il en soit autrement, puisque le col n'est qu'une partie de l'organe gestateur, et que l'un et l'autre sont formés par les canaux de Muller.

Cependant quelques auteurs citent des exemples d'absence du col avec développement normal du corps de la matrice ; mais quand on les lit avec quelque attention, on se prend à douter de la réalité des résultats qu'ils annoncent. Je parle ici de l'absence congénitale du col, car il est bien évident, ainsi que je le dirai tout à l'heure, que cet organe s'atrophie quelquefois d'une manière morbide et disparaît souvent par l'effet de l'âge. Sans doute, le col de l'utérus peut ne pas avoir les dimensions qu'il présente d'ordinaire, quoiqu'il soit presque impossible de rien déterminer à cet égard, à cause des nombreuses variations individuelles qu'offre cet organe; mais il y a loin cependant d'un volume moindre à une absence complète. On comprend avec peine, en effet, qu'un arrêt de développement frappe isolément le col de l'utérus, et respecte le reste de l'organe gestateur; aussi je n'hésite pas à admettre que, dans les cas cités comme absence complète du col de la matrice avec développement normal du corps, on avait affaire à un déplacement de l'organe, à une forte déviation en arrière, ou à une insertion vaginale sur les lèvres du museau de tanche, comme Marion Sims en cite un exemple (1).

Arrêt de développement. — Le développement rudimentaire de l'utérus, et partant de son col, a été noté aussi souvent que l'absence complète; sur le vivant il est difficile de distinguer l'un de l'autre; le dommage n'est considérable qu'au point de vue tératologique, car sous le rapport de la fécondation, la femme est également stérile dans l'un et l'autre cas.

Ces anomalies de l'utérus peuvent exister avec l'intégrité parfaite des organes externes de la génération, et la femme ne perd alors aucun des bénéfices de la copulation : « Fœmina erat, dit Colombus, cujus vulva ab aliarum fœminarum vulvis nihil peculiare et diversum habebat : et matricis colli portio prominebat vel matricis collo simile, matrix autem nulla aderat in abdomine, neque vasa seminaria, neque testes. Et quoties cum viro coibat (coibat autem sæpe), mirandum in modum conquerebatur (1). »

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(1) Marion Sims, *Notes cliniques sur la chirurgie utérine*, 1866, p. 253.

Notre époque, comme je l'ai développé plus haut (2), ne contredit pas l'opinion exprimée par l'anatomiste du XVIe siècle, et proclame bien haut, au contraire, que l'utérus n'a aucune influence sur les désirs et les plaisirs copulateurs.

Les ovaires, dont le point d'origine est dans le corps de Wolf, peuvent exister en l'absence de l'utérus; dans ce cas l'ovulation est privée de l'hémorrhagie utérine, mais s'accompagne de molimen et quelquefois d'une hémorrhagie supplémentaire, fournie souvent par la muqueuse vaginale.

Presque toujours les trompes suivent les destinées de l'utérus dont elles ne sont que des ramifications, et avec lequel elles découlent des tubes de Muller.

Mais, je le répète, toutes ces considérations n'ont qu'un intérêt purement scientifique, car la stérilité qui en résulte est radicale et au-dessus des ressources de l'art.

Conicité du col de l'utérus. — Je ne veux parler ici que de l'allongement anormal du col de l'utérus se produisant en dehors de toute affection organique de l'organe. Cette augmentation de longueur porte quelquefois sur la totalité du col, et tantôt est limitée à une des lèvres du museau de tanche. Dugès et madame Boivin (3) citent des exemples de l'un et de l'autre cas; et Duparcque rapporte (4) une observation qui montre tout à la fois le degré que cet allongement peut atteindre, et sa possibilité congénitale que tous les auteurs ne paraissent pas admettre.

Une semblable difformité doit, dans beaucoup de circonstances, empêcher la fécondation ; il advient, en effet, ou que le col utérin, poussé par la verge, se coude sur lui-même, soit en avant, soit en arrière, de manière à diriger en haut l'ouverture du museau de tanche; ou qu'il se croise avec le membre viril, de telle sorte que l'éjaculation va se perdre dans le cul-de-sac du vagin.

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(1) Realdus Colombus, *De re anatomicâ*, 1572, lib. XV, p. 495.

(2) Voyez la page 474.

(3) Mme Boivin et Dugès, *Traité pratique des maladies de l'utérus et de ses annexes*. Paris, 1833, t. I, p. 193.

(4) Duparcque, *Traité sur les altérations organiques simples et cancéreuses de la matrice*, 2e éd. 1839, t. I, p. 156.

A ces circonstances purement mécaniques dont il faut bien reconnaître la possibilité, Lisfranc ajoute, comme cause de stérilité dans le cas de la forme conique du col, l'étroitesse extrême de l'ouverture utéro-vaginale du museau de tanche. « Son sommet qui est en bas, dit-il, offre à peine le diamètre de 2 millimètres 1/2 environ (une ligne); il est percé à son centre d'une petite ouverture qu'on dirait avoir été pratiquée avec une vrille très-fine; toujours, jusqu'aujourd'hui, j'ai observé que l'extrémité inférieure de la matrice gagnait en longueur ce qu'elle perdait en largeur. La disposition sur laquelle j'insiste, et que j'ai le premier indiquée, rend la conception très-difficile et même ordinairement impossible. Sur le très-grand nombre de personnes que j'ai touchées, ou que j'ai examinées avec le spéculum, j'ai reconnu que la forme du col utérin dont je m'occupe rendait les femmes stériles dix-neuf fois sur vingt, et j'ai toujours appris, en les interrogeant, que celles qui avaient été assez heureuses pour devenir enceintes n'avaient fait ordinairement qu'un enfant, très-rarement deux. J'écris ce que j'ai observé, et je ne soutiens point que les faits ne puissent pas offrir des exceptions (1). »

Marion Sims est arrivé à peu près aux mêmes résultats que Lisfranc : sur 218 femmes dont le siége de la stérilité était au col, 175 offraient une hypertrophie conique, congénitale ou morbide (2).

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(1) Lisfranc, *Clinique chirurgicale de l'hôpital de la Pitié*. Paris, 1833, t. II, p. 139.

(2) Marion Sims, *loc. cit.*, p. 237.

Je m'occupe plus loin de l'allongement hypertrophique du col, survenant à la suite d'une lésion organique de l'organe ; en cette place, je ne retiens que l'allongement congénital, et je le considère comme une cause à peu près certaine de stérilité, soit à cause de sa facile courbure pendant le coït, soit à cause de l'étroitesse de l'ouverture utéro-vaginale.

Bien des moyens ont été proposés pour diminuer la longueur du col et dilater son ouverture : les astringents, les caustiques, le feu, les dilatateurs de toutes sortes, ont tour à tour été préconisés et employés sans grand succès.

Devant ces tentatives infructueuses, Lisfranc proposa l'amputation du col de l'utérus, et cita même deux cas où cette opération fut pratiquée heureusement, l'une par lui et la seconde par un autre médecin qu'il ne nomme pas. « L'opération dont je viens d'entretenir le lecteur, dit-il en terminant, entrera-t-elle dans le domaine de la médecine opératoire ? Je laisse à l'expérience le soin de décider cette grande question. »

L'expérience s'est prononcée en faveur de Lisfranc ; l'amputation du col règne aujourd'hui sans conteste dans le domaine de la chirurgie.

Atrésie et étroitesse du col. — La non-perméabilité du col de la matrice peut être congénitale ou acquise :

Dans le premier cas, l'atrésie s'appelle une *imperforation ;*

Dans le second cas, l'atrésie se nomme une *oblitération.*

Je ne m'occupe ici que de l'atrésie primitive, parce que l'atrésie consécutive rentre nécessairement dans le cadre des lésions organiques du col.

L'atrésie congénitale a presque toujours son siége à l'ouverture vaginale du col ou dans un point peu éloigné.

La nature de l'obstacle est tantôt une simple membrane qui tapisse le museau de tanche, et tantôt un tissu cellulaire, traversé par des fibres musculaires plus ou moins nombreuses.

Ce vice de conformation ne s'accompagne pas ordinairement d'autres anomalies de l'appareil génital; aussi ne se décèle-t-il, le plus communément, qu'à la puberté, par les symptômes qui caractérisent la rétention des règles.

Cette circonstance fait une obligation d'agir au plus vite, non pour donner à la jeune fille l'aptitude à la fécondation, mais pour la mettre à l'abri des dangers qui menacent sa vie.

Quand la muqueuse vaginale, en se repliant sur le museau de tanche, est le seul obturateur de l'ouverture, l'opération est très-simple et peut être faite avec un trocart, un bistouri ou des ciseaux.

Quand l'imperforation tient à la présence du tissu cellulaire dont j'ai parlé, l'opération est tout à la fois plus délicate et plus compliquée que la première. Après le percement de l'obstacle fait avec le trocart ou le bistouri, il est nécessaire de débrider à droite et à gauche, et de maintenir l'ouverture béante au moyen de mèches de charpie, d'éponge préparée ou de cônes de laminaria, introduits dans son intérieur.

Il est incontestable, si les règles font défaut, et si l'on suppose l'absence ou l'atrophie des ovaires, que toute opération est inutile, et pour l'écoulement d'un flux qui n'existe pas, et pour une fécondité absolument impossible.

Le plus ordinairement, il n'y a qu'une simple étroitesse d'une des deux ouvertures, suffisante pour amener souvent la stérilité, et pour produire toujours la dysménorrhée.

Il est rare que les deux ouvertures du canal utérin soient en même temps rétrécies; l'ouverture vaginale l'est plus souvent que l'ouverture utérine, sans admettre pourtant que cette anomalie soit commune.

Néanmoins, elle se rencontre dans la pratique et empêche fréquemment la fécondation.

Il faut donc y remédier.

Assez généralement la dilatation, forcée ou progressive, est insuffisante, et il est nécessaire de recourir à une opération chirurgicale.

Cependant il est sage de toujours tenter la dilatation, car si ce moyen n'est pas radical, il sert au moins de traitement préparatoire.

L'opération chirurgicale comporte des méthodes variables avec chaque cas ; mais elle doit toujours avoir pour objectif la rétractation du tissu cicatriciel, et empêcher que cette rétractation ne détermine un rétrécissement pire que le premier.

§ II. — Lésions organiques du col de l'utérus.

Si l'on excepte quelques dégénérescences, qui même ne sont pas toujours une cause de stérilité, puisqu'on a vu des femmes portant un cancer au col de l'utérus être fécondées, je ne sais aucune lésion organique qui, par elle-même, empêche le sperme d'arriver dans la matrice. Sans doute beaucoup de ces affections, ainsi que je vais le dire, peuvent consécutivement créer des obstacles au passage du fluide séminal ; mais il n'est, je le répète, aucune rougeur, aucune érosion, aucune ulcération qui, par leur nature seule, soient capables de s'opposer à la conception.

Mais il n'en est plus de même quand on les considère dans les conséquences que quelques-unes d'entre elles peuvent entraîner, et aussi au point de vue du traitement qu'elles réclament.

Les affections consécutives aux lésions organiques du col de l'utérus, et qui constituent par elles-mêmes de véritables lésions organiques de cet organe, affectent, à notre point de vue, tantôt la perméabilité seulement du canal utérin, et tantôt le col tout entier, dont elles altèrent tout à la fois la capacité, la direction et le volume.

Je vais examiner séparément chacune de ces lésions.

A — *Oblitération totale ou partielle du col.*

Les affections capables d'amener l'atrésie du col utérin n'aboutissent pas toujours aux mêmes résultats : tantôt elles diminuent seulement le diamètre du canal utéro-vulvaire (*rétrécissement*) ; tantôt elles donnent naissance à des produits anormaux ou à des brides qui interceptent sa perméabilité (*obstruction*) ; tantôt, enfin, elles en déterminent l'occlusion complète par l'adhérence de ses parois (*oblitération*).

Dans tous ces cas, les conditions de la progression du sperme à travers le col de l'utérus sont assez profondément modifiées, pour que la liqueur séminale éprouve une véritable impossibilité d'arriver jusque dans la matrice, et que, par suite, la stérilité en soit la conséquence.

Rétrécissement du canal utérin. — Le simple rétrécissement du canal utéro-vulvaire est, des trois accidents que je viens de signaler, le moins défavorable pour la conception ; il est ordinairement amené, ou par la phlegmasie, soit aiguë, soit chronique, ou par l'engorgement du col utérin.

Rétrécissement phlegmasique. — Le rétrécissement qui est dû à la phlegmasie offre dans sa formation un mécanisme identique avec celui qui préside à certains rétrécissements du canal de l'urèthre ; ainsi il est constitué tantôt par le durcissement de la muqueuse, tantôt par un bourrelet du tissu cellulaire sous-jacent, et tantôt par une induration du tissu même du col de l'utérus.

Il est aisé de constater le rétrécissement par le cathétérisme, mais il n'est pas aussi facile de déterminer la nature du rétrécissement. Sans doute, une main exercée peut faire la part de ce qui revient ou au durcissement de la muqueuse, ou au bourrelet du tissu cellulaire sous-jacent, ou à l'induration du tissu même du col ; mais pour la majorité des médecins, j'estime cette distinction très-difficile. Fort heureusement, elle n'a pas dans la pratique l'importance qu'on pourrait être tenté de lui attribuer, ainsi qu'on le verra par ce que je vais dire du traitement à opposer à ces sortes de rétrécissement.

La position mobile de l'utérus dans l'excavation du bassin et la direction de son orifice vulvaire ne permettent pas de laisser à demeure des corps rigides et lourds, qui exposent la femme à des dangers réels, comme ne l'a que trop montré la discussion de l'Académie de médecine sur le redresseur intra-utérin de Simpson et de Valleix (1). Mais si des sondes métalliques ne doivent point être laissées en place, on peut, sans inconvénient, pratiquer le cathétérisme avec des sondes dont le calibre va en augmentant. Le séjour de la sonde dans la cavité du col a une durée proportionnelle aux efforts qu'il faut faire pour surmonter le rétrécissement; cependant, en thèse générale, la sonde peut être maintenue dans le canal utéro-vulvaire, depuis cinq minutes jusqu'à une demi-heure et même davantage.

De plus, on peut recourir à des substances dilatatrices que l'on laisse à demeure pendant un ou deux jours. De ce nombre sont les cônes en éponge préparée, en laminaria, en racine de gentiane, etc., etc.

Quelquefois il arrive que la dilatation, quelque méthodique et quelque bien faite qu'elle soit, est impuissante à faire disparaître le tissu anormal qui constitue le rétrécissement, et qu'il faut, comme dans les rétrécissements du canal de l'urèthre, recourir à la scarification et à la cautérisation.

Ces deux opérations étant également nécessitées par la présence de brides ou de fausses membranes développées dans le canal utérin, je renvoie leur examen au paragraphe suivant, consacré en partie à l'étude de ces productions anormales.

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(1) *Bulletin de l'Académie de médecine.* Paris, 1854, t. XIX, p. 628 et suiv.

Rétrécissement congestif. — Ce rétrécissement est en quelque sorte mécanique : il est dû à la pression exercée sur les parois du canal utérin par les parties voisines engorgées. Dans ces cas, l'ouverture extérieure tantôt disparaît comme au fond d'un entonnoir, et tantôt, au contraire, est proéminente par l'effet du gonflement des lèvres du museau de tanche qui la ferment par l'augmentation de leur volume.

Je n'ai point à faire ici l'histoire de l'engorgement du col, que je dois considérer en lui-même, indépendamment des maladies dont il n'est le plus souvent qu'un épiphénomène.

Presque toujours, quelle que soit la forme que revête l'engorgement, et qui le fait appeler tantôt engorgement congestif, tantôt engorgement dur, l'affection est produite par un état phlegmasique qui réclame impérieusement et exclusivement, dès le début, l'emploi des antiphlogistiques. Plus tard, quand la phlegmasie a disparu, les toniques et les reconstituants, comme le régime approprié, l'hydrothérapie, les bains de mer, achèvent la médication, avec les toniques et les astringents locaux.

Dans les cas d'engorgement phlegmasique simple, avec ou sans ulcération, mais avec une douleur constante par la pression à la partie postérieure du col, je me trouve toujours très-bien, quand la constitution de la malade le permet, d'une application de quelques sangsues sur le col même de l'utérus.

Dans quelques circonstances, sous l'empire d'une constitution pléthorique et d'une menstruation insuffisante, il se produit, chez quelques femmes, un engorgement dont aucune maladie n'est le point de départ, et qui, plus souvent peut-être que l'engorgement pathologique, rétrécit le canal utérin et met obstacle au passage du sperme.

Parmi plusieurs faits de cette nature que je pourrais rapporter, je me bornerai au suivant, très-intéressant et très-remarquable.

Mme C., Espagnole, grande, forte, bien musclée et très-sanguine, m'accuse une stérilité confirmée par quatre années de mariage; l'hémorrhagie menstruelle, médiocrement abondante mais très-régulière, est presque toujours précédée de douleurs lombaires et de coliques qui s'apaisent avec l'apparition du flux menstruel.

Jamais de leucorrhée, pas même à l'époque des règles.

Au toucher on trouve le col dur, volumineux, les lèvres proéminentes, surtout l'antérieure, mais n'accusant aucune douleur.

A la vue, la couleur est rouge; tous les vaisseaux sont gorgés; on comprend qu'il y a dans cette partie, comme d'ailleurs dans tout l'organisme, une exubérance et comme un trop-plein de la vie plastique.

Tous les autres organes de la génération sont en parfait état.

Dans ma pensée, cet excès de plasticité, en produisant un engorgement physiologique, si je puis ainsi dire, déterminait, comme l'engorgement morbide, un rétrécissement du col qui donnait lieu à la stérilité que j'avais à combattre.

Au moyen de sangsues appliquées directement, je dégorgeai le col; le mois suivant, l'absence des règles annonça une grossesse qui confirma toutes mes prévisions.

Depuis cette époque, toutes les fois que Mme C. a voulu avoir un enfant, il a fallu recourir au dégorgement du col; à chaque fois, — il y a eu trois grossesses — la fécondation a eu lieu, et les produits, arrivés à terme, jouissent tous de la plus parfaite santé.

Comme on le voit, le col de l'utérus peut être affecté d'un excès de plasticité qui, presque toujours, coïncide avec une exubérance de la vitalité générale.

Cependant l'engorgement physiologique du col n'est pas toujours lié à une constitution pléthorique; il peut être une disposition tout à fait locale.

La conduite à suivre n'est pas modifiée par cette circonstance, et j'estime que les sangsues ou des scarifications sur le col sont les moyens les plus prompts et les plus efficaces.

Obstruction du canal utérin. — L'obstruction du canal utérin peut être amenée par des circonstances de diverses natures : tantôt elle est due à la présence d'un ou de plusieurs calculs; tantôt elle est formée par un néoplasme, par une tumeur, par un polype, nés sur le col même ou dans l'intérieur de l'utérus; tantôt elle tient à des granulations qui, semblables à des bourgeons charnus, remplissent le col d'une véritable végétation; tantôt elle est occasionnée par la formation de brides ou par l'exsudation de fausses membranes, comme dans la métrite diphthéritique; tantôt, enfin, elle reconnaît pour cause les mucosités sécrétées par l'utérus, et dont l'abondance ou le durcissement créent au passage du sperme un obstacle souvent infranchissable.

On comprend de quelle importance est, au point de vue du traitement, le diagnostic différentiel de toutes ces causes d'obstruction, car en agissant à l'aveugle on s'expose à aggraver le mal au lieu de le détruire.

Heureusement le diagnostic n'est pas difficile quand on a, pour s'aider, l'inspection au spéculum et le cathétérisme utérin.

Le pronostic, au point de vue de la stérilité, n'a rien également de grave; c'est ici que l'on peut, avec toute raison, appliquer le fameux axiome : *Sublatâ causâ tollitur effectus*, car c'est, en effet, à l'enlèvement de la production anormale, que se résume tout le traitement de l'inaptitude à la procréation.

Dans les cas de calculs, ceux-ci sont saisis, s'ils peuvent l'être, et amenés au dehors. Mais faisons remarquer que ces concrétions pierreuses n'ont jamais été trouvées que sur le cadavre, et que je n'en parle que pour mémoire.

Quand un néoplasme, tumeur ou polype, est la cause de l'obstruction, il faut, si la chose est possible, recourir à une opération chirurgicale. Je sais bien, comme je le dirai en parlant des corps étrangers de l'utérus, que la fécondation et la gestation sont possibles avec la présence d'un polype, par exemple, dans la matrice; mais je suis convaincu de l'impossibilité de la fécondation, si le polype descend dans le col et l'obstrue. Dans tous les cas, l'existence de ces productions morbides est une grave présomption de stérilité et, à ce point de vue, leur disparition me paraît nécessaire.

Dans les cas de granulations, de bourgeons charnus, de végétations, n'importe leur nature, la curette de Récamier rendrait d'incontestables services, si elle n'avait pas l'inconvénient d'exposer l'organe gestateur à une phlegmasie intense, et de pallier seulement le mal pour un temps fort court, au lieu de le guérir. Sans doute dans quelques circonstances qu'il serait assez difficile de spécifier, cette opération de *curage* peut n'amener aucun accident sérieux, puisque Récamier assure l'avoir pratiquée plusieurs fois; mais l'incertitude précisément qui plane sur les conséquences qu'elle peut entraîner l'a mise en une juste suspicion auprès des praticiens; pour mon compte, je donne de beaucoup la préférence à la cautérisation, faite avec un bâton de nitrate d'argent que j'introduis rapidement dans toute la longueur du canal utérin, et que je remplace ensuite par une mèche de charpie fortement enduite de cérat, pour prévenir l'adhérence des parois cautérisées. Cette manœuvre n'empêche en aucune façon un traitement général, s'il est nécessaire, comme dans les cas de végétations syphilitiques, ou un traitement local mieux approprié à la nature de l'affection. Le nitrate d'argent, porté dans le canal utérin, n'a d'autre prétention que celle de débarrasser ce canal des obstructions qui en gênent le parcours, mais il ne doit point s'élever jusqu'au titre de spécifique. Sans doute, dans beaucoup de circonstances, son action modifie heureusement la vitalité des tissus, et concourt ainsi à la disparition de la maladie mère, si je puis ainsi dire; mais cette action purement locale, est, dans beaucoup de cas, insuffisante, et réclame le concours d'une médication générale. Je n'ai point ici à faire l'histoire de cette médication; mais j'ai dû la signaler comme un complément indispensable au traitement de ce genre d'affections du col de la matrice.

Si l'obstruction est formée par des brides, une nodosité, une cicatrice vicieuse, ou par toute autre production de tissu anormal, que la dilatation telle que je l'ai expliquée plus haut est impuissante à faire disparaître, on ne doit pas hésiter à recourir aux scarifications, ainsi qu'on les pratique sur le canal de l'urèthre. Quel que soit l'instrument dont on fasse usage, que ce soit celui d'Amussat, celui de Leroy (d'Étiolles), ou celui de Raybard (1), on doit toujours agir de haut en bas, c'est-à-dire de dedans en dehors, et ne pas intéresser les tissus sains du col de l'utérus.

Enfin, les mucosités que l'on rencontre si fréquemment dans le canal utérin, et qui sont, plus souvent qu'on ne pense, un obstacle réel au passage du sperme, rentrent tellement dans les considérations que j'aurai à présenter plus tard sur la leucorrhée, que je crois devoir réserver leur étude pour le chapitre consacré à l'influence exercée par les pertes blanches.

Cependant je ferai observer ici, pour n'y plus revenir, que si les mucosités s'étaient durcies, il les faudrait considérer comme de véritables calculs, et en opérer l'extraction de la manière que j'ai indiquée plus haut.

Oblitération du canal utérin. — Une grande différence existe entre l'atrésie congénitale dont j'ai déjà parlé et l'oblitération accidentelle qui fait le sujet de ce paragraphe. Dans l'atrésie congénitale, en faisant abstraction des cas constitués par l'imperforation de la muqueuse vaginale, le col est plein, le conduit utérin n'a jamais existé, et l'art, s'il intervient, est forcé de percer un canal à travers des tissus compacts. Dans l'oblitération accidentelle, en admettant l'adhérence tout entière des parois du conduit, circonstance rare et extrême, la chirurgie opère sur des tissus anormaux et a, pour se conduire et pour garant de son entreprise, les limites mêmes du canal naturel.

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(1) Voy. Gaujot et Spillmann, *Arsenal de la chirurgie contemporaine.* Paris, 1872, t. II.

L'inflammation, l'ulcération et la cautérisation du col utérin sont les causes les plus ordinaires de son oblitération; celle-ci, comme je viens de le dire, s'opère par l'adhérence d'un ou de plusieurs points, ou de la totalité de la muqueuse.

Cependant, il ne faut pas croire que l'oblitération consécutive dont je parle soit fatale et commune; si, en effet, à une époque où l'on fait abus des cautérisations, et si au milieu des cas si nombreux d'inflammations et d'ulcérations, spécifiques ou non, du col utérin, qui se présentent à la pratique médicale, on ne rencontre pas plus souvent l'accident dont il est ici question, il faut l'attribuer à la sécrétion muqueuse qui, dans toutes ces circonstances, est accrue, et dont le produit fait l'office de corps isolant. De plus, dans les cas de cautérisation, l'eschare contribue aussi à isoler les surfaces avivées, car l'adhérence dont il s'agit se montre de préférence après une cautérisation légère, après l'action du nitrate d'argent, par exemple, plutôt qu'après celle du nitrate acide de mercure ou celle du fer rouge.

Cependant, en dépit de ces circonstances heureuses, la matière plastique ne parvient pas toujours à être maintenue sur les parties où elle se forme, et alors, jetant des racines sur un point opposé, elle rapproche et réunit, en ces points, les parois du conduit utérin, et y détermine une oblitération à peu près complète, sur une étendue plus ou moins considérable de son parcours.

Je dis à peu près complète, parce que les règles parviennent presque toujours à se créer un passage quelquefois imperceptible, mais incapable de recevoir le sperme.

Il faut donc, sous peine d'empêcher à jamais la jonction du produit mâle et du produit femelle, rétablir le passage dans son intégrité ou tout au moins dans sa viabilité.

L'opération à faire consiste, tantôt en un simple débridement, et tantôt en une dissection des parois adhérentes; quelquefois même, quand l'oblitération ne porte que sur un point, il suffit de forcer l'obstacle avec le bout d'une sonde, et alors on retombe dans les cas de dilatation dont j'ai longuement parlé plus haut.

A moins d'un état de dégénérescence de l'organe ou de toute autre contre-indication formelle, le chirurgien doit toujours agir dans les circonstances qui nous occupent. L'opération en elle-même, quelle que soit l'étendue de l'oblitération, n'est ni difficile pour l'homme de l'art, ni dangereuse pour la patiente; tandis qu'elle est, au point de vue de la fécondation, de la plus haute importance, puisqu'elle remédie à une cause certaine de stérilité.

B. — *Allongement hypertrophique du col de l'utérus.*

L'histoire des abaissements de l'utérus a été singulièrement modifiée par un mémoire que Huguier a publié en 1860 (1), et ramenée dans des limites beaucoup plus étroites que par le passé.

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(1) Huguier, *Mémoires sur les allongements hypertrophiques du col de l'utérus dans les affections désignées sous le nom de descente, de précipitation de cet organe, et sur leur traitement par la résection ou l'amputation de la totalité du col, suivant la variété de cette maladie.* Paris, 1860, in-4, avec planches.

Sans doute les abaissements de diverses sortes ne doivent point être rayés de la pathologie gynécologique; mais leur existence, que l'on croyait anciennement si commune, doit être restreinte et céder une large place à une autre affection beaucoup plus fréquente, et avec laquelle, jusqu'à Huguier, l'abaissement était presque toujours confondu. Je veux parler de l'allongement hypertrophique du col de la matrice.

Huguier, dont le travail laisse peu à désirer, a distingué l'hypertrophie cervicale selon qu'elle siége à la partie vaginale du col ou à la partie sus-vaginale, c'est-à-dire au-dessus de son insertion au cul-de-sac du vagin.

Cette distinction, adoptée par tout le monde et que nous suivrons à notre tour, n'indique pas une indépendance absolue de l'une de ces parties à l'endroit de l'autre; mais, tout en admettant que l'une de ces portions de l'organe ne peut acquérir un volume un peu considérable sans que l'autre participe à son tour à cette augmentation, il faut reconnaître que, selon le siége qu'elle occupe, l'hypertrophie présente des signes physiques distincts et produit des troubles fonctionnels différents.

Nous allons donc examiner séparément : 1° l'hypertrophie sous-vaginale; 2° l'hypertrophie sus-vaginale, au double point de vue de la facilité du coït et de la stérilité.

1° *Hypertrophie sous-vaginale du col.* — De tout temps l'hypertrophie qui nous occupe a été signalée, soit comme une anomalie, soit comme un état morbide entraînant presque fatalement le prolapsus de l'utérus; mais c'est depuis la publication du travail de Huguier, que cette affection a pris dans la nosologie la place qu'elle mérite réellement.

L'hypertrophie sous-vaginale se présente dans trois conditions très-différentes qui légitiment les trois variétés suivantes :

1° Hypertrophie congénitale;

2° Hypertrophie par défaut d'*involution;*

3° Hypertrophie morbide.

La première variété m'a déjà occupé quand j'ai parlé des anomalies du col et plus particulièrement de sa conicité. Je n'ajouterai ici que quelques mots pour compléter l'article auquel je renvoie.

Bennet, en Angleterre, assure avoir rencontré, chez des vierges, des cols d'une longueur de 9 centimètres, et qui s'échappaient de la vulve, sous forme d'un doigt volumineux. West a également vu de ces allongements se présenter à l'orifice vulvaire et s'accompagner des symptômes relatifs aux prolapsus, surtout à l'époque des règles.

Mes observations ne contredisent pas les assertions de West; mais, contrairement à Bennet, je n'ai jamais rencontré, chez des vierges ou des femmes nullipares, un col présentant 9 centimètres de longueur.

Néanmoins, il n'est pas nécessaire que le col ait un pareil allongement, ni qu'il y ait franchi l'orifice vulvaire, pour comprendre combien sa présence près de cet orifice rend difficiles et quelquefois impossibles les rapports sexuels, non-seulement à cause des douleurs éprouvées par la femme, mais encore par l'obstacle tout mécanique que le col hypertrophié oppose à l'intromission. De plus, la stérilité accompagne *presque toujours* cet état, soit par suite de l'impuissance dont nous venons de parler, soit à cause de la forme conique du museau de tanche qui nous a occupé plus haut, soit à cause du rétrécissement du canal cervical, amené par l'hypertrophie des tissus du col.

Cette dernière considération sera d'un grand poids dans la détermination à prendre pour remédier à cette infirmité, et attirera notre attention, quand nous exposerons le traitement de cette forme de l'hypertrophie cervicale.

La seconde variété, que nous avons appelée *hypertrophie* *par défaut d'involution*, nous a été inspirée par les travaux de Simpson; son histoire trouvera sa place, plus naturellement qu'ici, dans l'exposition que nous ferons, dans un paragraphe spécial, de ce que les Anglais appellent *involution*, et des modifications imprimées à l'utérus par un excès ou par un défaut de ce travail physiologique.

Il ne nous reste donc plus à examiner que l'hypertrophie morbide qui constitue notre troisième variété, et qui est tout à la fois la plus commune et la mieux connue.

L'hypertrophie morbide ne se forme jamais spontanément; elle ne se produit, au contraire, que d'une manière lente, à la suite de lésions plus ou moins profondes du col, telles que congestions répétées, inflammation et ulcérations prolongées de la muqueuse, etc. Selon le professeur Courty, ces lésions sont même insuffisantes pour produire l'hypertrophie, sans le réveil de la tendance de l'utérus à l'état hypertrophique.

Quoi qu'il soit de cette dernière considération, l'existence d'un allongement morbide du col suppose toujours un état pathologique antérieur, dont la connaissance importe tout à la fois au pronostic et au traitement.

Les femmes atteintes de l'hypertrophie qui nous occupe éprouvent des tiraillements dans la région des lombes, dans les fosses iliaques et même dans l'abdomen. Debout, il leur semble que l'utérus va s'échapper de la vulve; couchées, elles sentent une pesanteur à droite ou à gauche et un changement de direction des tiraillements; assises, elles éprouvent comme un refoulement des organes, et s'exposent à une douleur vive si elles prennent cette position sans précautions et sans ménagement.

Le toucher et l'examen au spéculum font constater une augmentation considérable dans le volume du col qui peut atteindre celui d'un œuf de poule et même celui du poing; cet accroissement a surtout lieu chez les femmes qui ont eu précédemment des enfants, car chez les vierges et les nullipares le col atteint rarement de semblables proportions.

Le museau de tanche subit des déformations de toutes sortes que le professeur Courty énumère avec autorité : « Tantôt, dit-il, la portion sous-vaginale du col est effilée vers le bas, conique, en forme de trompe ou de bec d'oiseau à double mandibule, l'orifice se trouvant à l'extrémité du cône ou sur l'une de ses faces; tantôt elle est cylindroïde, globuleuse ou élargie par le sommet en forme de massue; tantôt les deux lèvres du museau de tanche sont également hypertrophiées et l'orifice utéro-vaginal est au milieu; tantôt elles sont inégalement hypertrophiées et l'orifice est reporté sur l'une ou l'autre face et même entièrement cachée par celle des deux lèvres qui est plus hypertrophiée que l'autre; tantôt enfin l'hypertrophie, ayant porté davantage sur les couches externes de l'organe, semble incliner les bords de l'orifice vers la cavité du col; tantôt, au contraire, l'hypertrophie, ayant porté davantage sur ses couches internes, détermine un retournement des deux lèvres en dehors, et une sorte d'inversion de l'orifice du col qui s'étale, s'épanouit comme une fleur, laissant voir sur la convexité du museau de tanche la muqueuse de la cavité même du col, soit également, soit inégalement sur les deux lèvres, suivant que l'hypertrophie a porté également ou inégalement sur ces deux portions de l'organe (1). »

Quelquefois l'hypertrophie du col entraîne l'abaissement de l'organe tout entier par l'augmentation du poids que l'hypertrophie détermine; cette complication a surtout lieu dans les cas de relâchement du vagin et des ligaments, déterminé par des accouchements antérieurs ; il est toujours facile, avec un peu d'attention, de constater cet abaissement de l'utérus, en tenant compte des dimensions et de l'élévation que présentent les culs-de-sac vaginaux antérieur, postérieur et latéraux. « Ainsi, disent MM. Bernutz et Goupil, chez neuf de nos malades, le col se trouvait à peine éloigné de l'orifice vaginal, de 20 à 30 millimètres, tandis que le cul-de-sac antérieur était encore distant de 50 à 55 millimètres, et le cul-de-sac postérieur à 70 ou 80 millimètres; ces mesures suffisaient donc à elles seules pour démontrer qu'il n'y avait aucun abaissement de l'utérus, qu'il était seulement simulé par l'allongement du col (1). »

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(1) Courty, *Traité des maladies de l'utérus et de ses annexes*. 1re édit., p. 633.

Rappelons que cette mensuration des culs-de-sac vaginaux est d'une extrême importance dans le diagnostic différentiel de l'abaissement de l'utérus et de l'allongement hypertrophique du col.

Et maintenant, quel rôle faut-il attribuer à l'hypertrophie sous-vaginale du col dans le sujet qui seul nous doit intéresser ici, c'est-à-dire l'impuissance ou la stérilité de la femme? Si cet état morbide ne met obstacle ni au coït ni à la fécondation, son histoire doit être réservée aux ouvrages de pure gynécologie et ne peut nous occuper davantage. Si, au contraire, l'hypertrophie du col gêne le rapprochement ou s'oppose à l'imprégnation, son étude rentre dans notre domaine, et nous devons rechercher les moyens de la combattre et de rendre à la femme l'aptitude au congrès et à la fécondation.

D'après tout ce qui précède, la question soulevée ici doit être résolue d'une manière affirmative, et cette affirmation légitimer la place et l'attention que nous donnons à l'hypertrophie sous-vaginale du col.

Sans doute, et nous sommes loin de le contester, toutes les hypertrophies du col ne sont pas des causes fatales, certaines et constantes de stérilité. Huguier et d'autres observateurs ont rapporté des faits d'hypertrophie coïncidant avec un état de grossesse; nous-mêmes, si c'était ici leur place, nous pourrions augmenter le nombre de ces exemples; mais, malgré ces cas que l'on peut mettre au rang des exceptions, il faut reconnaître que la stérilité et, bien souvent, la difficulté du coït résultent de l'état hypertrophique du col de l'utérus.

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(1) Bernutz et Goupil, *Clinique médicale sur les maladies des femmes*. Paris, 1862, t. II, p. 632.

Au point de vue du coït, l'obstacle est tout mécanique : l'intromission du pénis dans la cavité vaginale est rendue impossible par l'augmentation de volume que prend quelquefois le col et qui, par son allongement, bouche d'une manière complète l'orifice vulvaire. Dans les cas mêmes où cet orifice n'est pas occupé par le col faisant saillie au dehors, l'espace laissé libre dans le vagin est insuffisant pour permettre un coït complet; alors l'organe mâle heurte violemment l'organe femelle et le congrès devient un supplice auquel la femme se refuse ou qu'elle n'accepte qu'avec une douloureuse résignation.

Au point de vue de la fécondation, en ne nous occupant que des cas où le col hypertrophié n'a pas franchi l'orifice vulvaire, l'harmonie de rapport entre le méat urinaire de l'homme et l'ouverture utérine est rompue, à moins que l'homme n'ait la précaution de mesurer l'intromission d'après l'espace laissé libre dans le vagin; dans le cas contraire le pénis croise le col de l'utérus, et le sperme va se perdre inutilement au fond de la cavité vaginale.

La conicité du col est depuis longtemps connue comme une cause de stérilité, soit parce qu'elle facilite le croisement de la verge et du col, comme nous venons de le dire, soit parce que l'ouverture cervicale se trouve alors anormalement placée, et qu'elle est affectée de rétrécissement qu'explique l'hypertrophie de l'organe (1).

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(1) Voyez l'article sur la *conicité du col*, p. 677.

Si l'hypertrophie ne porte que sur une des lèvres de l'ouverture, sur l'antérieure le plus communément, la stérilité n'est pas moins certaine que dans les cas précédents, parce que la lèvre hypertrophiée retombe sur la lèvre saine, et ferme ainsi tout passage au sperme.

Nous pourrions multiplier ces explications, en passant en revue toutes les formes que peut revêtir la partie sous-vaginale du col hypertrophié ; mais nous pensons qu'avec ce qui précède un examen plus détaillé serait inutile et fastidieux ; nos lecteurs ont tous les éléments nécessaires pour juger cette cause de stérilité, et comprendre la place que nous avons donnée ici à l'hypertrophie sous-vaginale du col de l'utérus.

Si quelquefois l'impuissance et presque toujours la stérilité sont certaines dans l'état pathologique qui fait le sujet de ce chapitre, il faut nous hâter de reconnaître que ces résultats de l'hypertrophie du col ne sont point au-dessus des ressources de notre art.

La thérapeutique médicale, il faut l'avouer, offre peu de chances de succès. Cependant on peut tenter l'action des fondants (iode, mercure, brome), après avoir fait disparaître toutes les traces d'inflammation ou de congestion, s'il en restait encore ; on mêt la malade à un régime sévère, capable de diminuer le mouvement nutritif, et l'on seconde cette action générale par des sudations, le traitement arabique, etc.

Mais, nous le répétons, tous ces moyens ne doivent inspirer qu'une confiance très-limitée, et l'honneur de la médication revient à la thérapeutique chirurgicale, à la résection du col hypertrophié.

Cette opération, pratiquée plusieurs fois par Dupuytren, très-souvent par Lisfranc, dans le but de remédier à la stérilité résultant de la conicité du col, a été remise en honneur par Huguier comme le moyen le plus sûr et le plus expéditif de débarrasser la femme d'une infirmité douloureuse et pénible.

Quoique l'opération soit à peu près exempte de souffrances, on peut anesthésier la malade, si elle le demande.

On place la patiente sur le dos, les jambes largement ouvertes, exposée à un jour favorable; si le col fait saillie à la vulve, il suffit de faire écarter les grandes lèvres par un aide, ou les parois vaginales par des dilatateurs, pour arriver au point où la section doit être faite.

Si le col est dans le vagin, on le met à découvert par les moyens ordinaires (dilatateurs, spéculum bivalve, à bec de cane, etc.), et on saisit le museau de tanche avec les pinces de Museux, un ténaculum ou des pinces à crochet; il faut avoir soin, comme le recommande Huguier, de n'exercer aucun tiraillement sur le col et de l'amputer sur place.

A cet effet, on le pousse d'abord en haut, et alors, avec un bistouri à long manche, on pratique une incision demi-circulaire à la partie postérieure et *à un demi-centimètre au-dessous* de l'insertion du vagin.

Puis, ramenant le col en bas, on termine l'opération par une incision demi-circulaire antérieure, qui vient rejoindre les deux bords de la première incision.

Pour se mettre en garde contre tout danger d'hémorrhagie, il faut avoir la précaution, après avoir bien lavé la plaie du col, de tamponner le vagin, en appliquant sur le col amputé de petits tampons d'ouate imbibés dans une solution de perchlorure de fer au 30°.

Quelquefois il est préférable de se servir de longs et forts ciseaux courbés sur le plat, surtout quand les tissus sont durs et qu'on a quelque difficulté à manœuvrer le bistouri.

M. Marion Sims préconise un autre procédé que nous devons faire connaître :

Avec de forts ciseaux il divise, des deux côtés, le col de façon à disjoindre les deux lèvres du museau de tanche, jusqu'à la hauteur qu'il désire; puis il enlève un de ces lambeaux, et laisse passer deux ou trois époques menstruelles avant d'exciser l'autre.

Mais un jour, devant emporter en une seule fois le col et n'ayant pas à sa disposition l'écraseur de M. Chassaignac, il se vit forcé de faire l'opération avec des ciseaux, comme nous l'avons dit ci-dessus ; puis il ajoute : « Je fixai un ténaculum à la lèvre antérieure du museau de tanche, et j'attirai doucement le col en avant; je le tins fermement dans cette position, et, après l'avoir fendu des deux côtés avec des ciseaux, près de l'insertion du vagin, j'enlevai vivement la moitié antérieure, puis la postérieure. J'avais l'intention de laisser la plaie se cicatriser de la manière ordinaire, par granulation, ce qui aurait demandé de trois à cinq ou six semaines; mais, en examinant la plaie et en attendant que le saignement cessât, l'idée me vint tout à coup de recouvrir la surface coupée avec la membrane muqueuse vaginale, de la même manière que nous recouvrons avec la peau la plaie d'un bras ou d'une jambe amputés par la méthode circulaire. Je traversai immédiatement, d'avant en arrière, les bords de la plaie avec quatre sutures d'argent, deux de chaque côté du canal cervical, ce qui ramena la membrane vaginale par-dessus la plaie du col, qu'elle recouvrit complétement, sauf une petite ouverture ovale réservée au centre et correspondant à celle du canal cervical. — La plaie guérit par première intention; les sutures furent retirées neuf ou dix jours après (1). »

Depuis cette époque, M. Marion Sims a adopté cette manière de faire et il la croit supérieure à tout autre mode opératoire.

2° *Hypertrophie sus-vaginale du col.* — C'est surtout dans cette partie de son travail que Huguier a fait preuve de la plus grande sagacité; le premier il a tiré des déductions pratiques, non-seulement de ses observations et expériences personnelles, mais encore des observations et des expériences faites avant lui, et dont leurs auteurs n'avaient entrevu aucune conséquence, relativement à l'existence, au diagnostic et au traitement de l'hypertrophie sus-vaginale du col.

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(1) Marion Sims, *Notes cliniques sur la chirurgie utérine*, p. 246.

Le travail de Huguier est complet; on peut le suivre dans la voie qu'il a ouverte, mais on ne peut espérer ni le corriger, ni le trouver en défaut.

« La maladie que l'on a désignée jusqu'à ce jour, dit Huguier, sous les noms de prolapsus, de précipitation, de chute complète de l'utérus, n'est, très-généralement, autre chose qu'une hypertrophie longitudinale de la portion sus-vaginale de l'organe, dont le corps et le fond sont restés dans la cavité pelvienne, bien que le vagin soit entièrement renversé et que la tumeur pendante entre les cuisses ait une longueur égale ou supérieure à celle de l'utérus à l'état normal. »

Et le professeur Courty, citant le même passage, ajoute :

« L'exactitude de cette proposition est prouvée par les recherches historiques, l'anatomie pathologique et les faits cliniques. »

En s'allongeant, la partie sus-vaginale du col descend dans le vagin, en renversant celui-ci et en entraînant, en avant la partie de la vessie qui lui est adhérente, et en arrière le repli vagino-rectal du péritoine, et quelquefois aussi le rectum lui-même.

Le déplacement de tous ces organes rend compte des phénomènes éprouvés par les femmes présentant à la vulve de semblables tumeurs.

Du côté de l'utérus dont le col hypertrophié occupe le centre de la tumeur dont nous parlons, on constate de la douleur et une sécrétion abondante de muco-pus. La menstruation est longue, abondante, s'accompagnant souvent de métrorrhagie.

Les rapports sexuels sont presque impossibles, et la stérilité est à peu près constante.

Du côté de la vessie, les besoins d'uriner sont fréquents, mais la miction est difficile parce que le réservoir urinaire est soustrait à la pression des viscères, et que le canal de l'urèthre est fortement fléchi dans le point où il traverse le ligament sous-pubien et le muscle de Wilson ; de là les efforts que font les malades pour porter la tumeur en haut et en arrière, et de là aussi l'écoulement de l'urine sur la muqueuse vaginale et vulvaire qu'elle irrite et qu'elle excorie.

Du côté de l'intestin, constipation mécanique qui oblige la malade, pour la défécation, à porter la tumeur en haut et en avant.

La station debout est presque impossible, ainsi que la moindre marche ou le moindre travail ; des tiraillements et des douleurs se font sentir dans la région lombaire, dans les aines, dans le ventre ; à tant de souffrances s'ajoutent bientôt les troubles de la nutrition qui portent une atteinte grave à tout l'organisme.

Pour les phénomènes locaux, les signes sont ceux du prolapsus de l'utérus ; tout l'intérêt consiste donc à établir le diagnostic différentiel de ces deux états morbides.

La base de ce diagnostic différentiel repose sur la mensuration de la partie sus-vaginale du col ; celle-ci est d'autant plus étendue que l'élongation est plus considérable ; ainsi, dans le prolapsus, l'hystéromètre pénètre à une profondeur de 6 à 7 centimètres, tandis que dans l'hypertrophie il pénètre à 9, 10, 12, 15 et même quelquefois jusqu'à 20 centimètres.

Concurremment avec ce moyen précieux de diagnostic, Huguier en indique plusieurs autres que nous n'allons qu'effleurer, en engageant nos lecteurs, pour plus de détails, à recourir au mémoire qui nous sert ici de guide.

Le toucher rectal fait reconnaître le col hypertrophié et, au-dessus, le corps de la matrice, tandis que, dans le prolapsus, il laisse sentir un vide à la partie moyenne, et latéralement deux cordes douloureuses, formées par les ligaments ronds et les trompes.

Le même toucher rectal fait percevoir le bout d'une sonde introduite dans la vessie et dirigée vers le rectum, quand il y a prolapsus; tandis que cette perception est presque impossible dans l'hypertrophie, à cause de l'interposition du col qui remplit le vagin.

La palpation abdominale exige une certaine habitude et quelques conditions favorables, pour donner des signes un peu certains; chez les femmes chargées d'embonpoint, ce moyen de diagnostic est difficile et douteux.

Les tentatives de réduction et de maintien de la tumeur éclairent mieux le praticien que la palpation abdominale. Dans le prolapsus, le premier temps de l'opération, c'est-à-dire le passage de la tumeur à travers l'orifice vulvaire, peut être difficile, impossible même, surtout à l'époque des règles; tandis que le second temps de l'opération, c'est-à-dire l'ascension de la tumeur dans la cavité vaginale, est facile et peu douloureux; de même aussi est sans souffrance le maintien de la tumeur, au moyen de pessaires ou de tout autre bandage. Dans l'hypertrophie, c'est l'inverse qui se produit : le passage de la tumeur à travers l'anneau vulvaire est ordinairement facile et sans douleurs; tandis que son refoulement en haut est difficile et douloureux, non-seulement par la tension des ligaments déterminée par l'ascension de l'utérus dans l'abdomen, mais encore par la pression que cet organe exerce sur les parties voisines.

Quoi qu'il en soit, l'hypertrophie sus-vaginale du col n'est pas une cause moins fréquente d'impuissance et de stérilité que l'hypertrophie de la portion sous-vaginale dont nous avons parlé tout à l'heure.

La tumeur formée, comme nous l'avons dit, du col hypertrophié, d'une portion de la vessie, du repli vagino-rectal du péritoine et quelquefois même du rectum, emplit le vagin, dont la capacité est encore rétrécie par le renversement de sa paroi propre; cette tumeur s'oppose, on le comprend, surtout quand elle occupe l'orifice vulvaire, à l'intromission du pénis, et devient ainsi une cause mécanique d'impuissance et, par suite, de stérilité.

Cependant la tumeur peut ne pas arriver jusqu'à la vulve, ou bien elle est artificiellement remontée dans le vagin, de manière à permettre l'entrée de la verge, et par conséquent le coït : la fécondation est alors possible, ainsi que le constatent quelques observations conservées dans la science ; malheureusement ces faits sont exceptionnels, car, dans presque tous les cas d'hypertrophie sus-vaginale un peu prononcée, il survient consécutivement des altérations des trompes et des ovaires qui mettent obstacle à la fécondation : « Je ne connais, dit Huguier, aucune femme qui ait conçu, une fois que l'utérus allongé avait été assez prolapsé pour avoir causé la chute et le renversement complets du vagin ; ce qui ne veut pas dire que cela n'ait jamais lieu, la science se chargerait de réfuter cette assertion; il suffit, en effet, pour que la fécondation ait lieu, que la voie utéro-ovarique soit restée libre. » Malheureusement, nous l'avons déjà dit, cette voie est presque toujours altérée dans l'hypertrophie sus-vaginale, comme dans le prolapsus ; ce qui rend, à notre point de vue, son pronostic plus grave que celui de l'hypertrophie sous-vaginale.

Malgré l'incertitude des résultats à atteindre sous le rapport qui seul nous préoccupe ici, nous devons essayer les douteuses ressources que notre art met à notre disposition, et ne penser à une opération toujours grave, l'amputation de la partie hypertrophiée, que lorsque tous les moyens ont échoué, et que l'infirmité rend la vie insupportable à la femme.

Les moyens médicaux sont bornés, à l'intérieur, au seigle ergoté et à l'iodure de potassium; à l'extérieur, aux frictions avec toutes les pommades fondantes et résolutives; à la position horizontale, avec le bassin relevé; aux lavements froids, etc.

Quand l'extrémité supérieure du vagin est seule renversée, et que la tumeur ne dépasse l'ouverture vulvaire que de 5 à 6 centimètres, on peut espérer la maintenir réduite au moyen de pessaires ovalaires ou en 8 de chiffre, qui appuient sur les parties latérales, sans froisser ni le rectum ni la vessie.

Souvent le maintien de ces pessaires est rendu impossible par le relâchement du vagin; il faut alors recourir à une espèce de plaque obturatrice soutenue par des courroies élastiques, que les malades ne supportent pas toujours.

Les moyens chirurgicaux capables de rétrécir le vagin et l'orifice vulvaire, tels que la cautérisation, l'excision, les sutures, etc., ne réussissent pas mieux que les moyens protéiques, car l'utérus franchit l'obstacle, entraîné par son propre poids.

Devant l'insuffisance de toutes ces ressources, Huguier a proposé, sous le nom d'*amputation conoïde du col*, la résection d'une partie ou de la totalité du col, entraînant celle de l'extrémité supérieure du vagin, après l'avoir préalablement dégagé de ses attaches avec le rectum et la vessie. Huguier a pratiqué cette opération délicate et a été imité par quelques autres chirurgiens.

La péritonite, la mort même de la malade peuvent avoir lieu à la suite de cette opération mais nous n'y insisterons pas davantage, parce qu'elle ne sera jamais proposée pour remédier à une stérilité que les lésions, presque toujours concomitantes des trompes et des ovaires, rendent absolue et certaine.

§ III. — Lésions vitales du col de l'utérus.

Le col de l'utérus, sous l'empire de l'excitation du coït, et surtout sous l'action du sperme violemment projeté contre lui, entre dans un état particulier d'excitabilité qui imprime à ses fibres circulaires et longitudinales des mouvements successifs de contraction et de dilatation. Ces contractions et ces dilatations alternatives produisent un effet à peu près analogue à celui des pompes aspirantes, présentent au sperme sortant de la verge une ouverture de réception plus grande, et le facilitent en même temps dans sa progression à travers le col.

Ces mouvements, ou, si l'on aime mieux, cette excitabilité du col utérin, seconde si puissamment l'entrée et la marche du sperme dans l'organe femelle, que son absence, et même son insuffisance, doivent être, dans beaucoup de cas, un empêchement à l'arrivée du sperme dans l'utérus, soit en lui offrant une ouverture trop restreinte, soit en l'abandonnant à son propre poids dans le canal du col de la matrice. Sans doute, le hasard peut tellement aboucher l'orifice du museau de tanche et le méat urinaire de la verge, que la liqueur prolifique arrive jusque dans l'utérus par la seule force de projection qui lui est imprimée, surtout si le col utérin est d'une assez grande brièveté; mais ces minutieuses circontances, si elles créent des exceptions dont il faut tenir compte, s'éloignent trop des conditions générales et régulières de la fécondation, pour entrer dans les prévisions de la science et du bon sens le plus commun. Elles peuvent servir à expliquer certains faits anormaux que, sans elles, nous ne pourrions comprendre; mais, je le répète, dans la très-grande majorité des cas, il ne faut point espérer en elles pour remplacer l'excitabilité du col.

Cependant, il ne suffit pas que cette excitabilité existe pour que la fécondation se produise; il importe encore qu'elle soit contenue dans de certaines limites, afin d'éviter la prédominance exclusive, soit des contractions, soit des dilatations, dont le résultat, dans l'un et l'autre cas, est la non-arrivée du sperme dans l'utérus.

En conséquence, les lésions vitales du col de la matrice, susceptibles de contrarier le passage de la liqueur séminale de l'organe mâle dans l'organe femelle, sont constituées, tantôt par la diminution et tantôt par l'augmentation de l'excitabilité nécessaire à la réception et à la progression du sperme.

Nous avons donc ainsi deux classes d'affections, l'une par asthénie et l'autre par sthénie.

Mais, avant d'aborder l'étude spéciale de chacune d'elles, qu'on me permette de revenir sur une question dont j'ai précédemment posé les termes, et qui comprend les relations que cette excitabilité utérine entretient avec le plaisir sexuel chez la femme, afin de savoir s'il est possible de formuler, d'après des données connues, le *critérium* de l'aptitude de l'utérus dans l'acte de la fécondation.

En restant dans les termes absolus de causalité, on est en droit de dire que le plaisir sexuel et l'excitabilité du col de la matrice ne découlent pas de la même source; mais tout en avouant que l'un et l'autre obéissent chacun à un excitant spécial qui, pour la volupté, est le désir, et pour l'excitabilité utérine le sperme, il faut reconnaître que les organes qui, respectivement, les manifestent, 1° sont sous la dépendance des lois générales qui régissent toute l'économie; 2° qu'ils ont entre eux des relations de voisinage que rend plus intime encore le but commun auquel ils concourent.

Avec ces prémisses, dont j'ai constaté la réalité par des expériences et des observations nombreuses dont la place n'est point ici, est-on autorisé à préjuger de la fécondité d'une femme d'après la somme de plaisir qu'elle prend à la copulation? Je n'hésite pas à répondre par la négative.

Tous les jours, des femmes sont fécondées en apportant au coït l'indifférence, le dégoût et même la haine; tous les jours des femmes sont fécondées au milieu des souffrances qu'entraîne souvent la perte de la virginité, ou au milieu des douleurs morales et physiques du viol; évidemment, dans toutes ces circonstances la volupté, ou même la plus simple émotion amoureuse n'a point été nécessaire pour l'excitabilité du col utérin; celle-ci a obéi à son excitant naturel, le sperme, et le col de la matrice, pour se contracter et se dilater, n'a pas eu besoin d'un signal parti du consensus intime ou du clitoris. La fécondation s'est faite en dehors des relations que l'utérus entretient avec l'économie, par l'action seule de la vitalité propre de la matrice.

Mais si l'excitabilité utérine est indépendante, dans de certaines limites, de l'existence du plaisir vénérien, il n'en est plus de même, dans beaucoup de cas, quand ce plaisir atteint une puissance trop forte; la matrice retombe alors sous l'empire des lois générales de l'organisme et prend sa part de l'exaltation que le coït communique à l'économie tout entière.

C'est ce qui arrive en effet.

Les mariages d'amour à leur début et les femmes trop passionnées sont également stériles. Dans les ardeurs et les tressaillements d'un coït épileptiforme, l'utérus, spasmodiquement contracté, resserre et bouche l'ouverture du museau de tanche et force ainsi le sperme à se perdre sans profit dans la cavité vaginale; de plus, dans les convulsions de la volupté, les rapports d'opposition de l'organe mâle et de l'organe femelle sont altérés, et cette cause, toute mécanique, bien connue des femmes habiles dans l'art d'éviter les grossesses, joue un rôle plus important qu'on ne pense dans la stérilité des personnes à tempérament de feu.

Cependant, toutes les femmes qui trouvent dans la copulation des voluptés convulsives ne sont pas fatalement condamnées à l'infécondité ; je pourrais citer de nombreux exemples de fécondation accomplie au milieu du délire érotique le plus prononcé. Dans ces cas, l'utérus ne participe pas à l'excitation générale, et tout l'éréthisme se concentre dans l'appareil copulateur; je suis convaincu que si l'on pouvait examiner la matrice dans ces rapides instants de délire cynique, on serait étonné de sa régularité fonctionnelle, au milieu du désordre d'action qui caractérise toutes les autres fonctions de l'organisme. Ici encore, le plaisir vénérien ne peut être pris comme thermomètre de l'excitabilité utérine, et c'est ailleurs qu'il faut chercher les signes de la diminution ou de l'augmentation de son énergie.

C'est ce que je vais essayer de faire dans les deux paragraphes suivants :

Insuffisance de l'excitabilité du col de l'utérus. — Les causes qui peuvent amener cet état sont nombreuses et variées ; elles sont générales ou locales.

Les causes générales sont toutes celles qui agissent sur la vie plastique ou sur l'innervation, et dont l'étude m'a trop occupé dans maints endroits de ce livre, pour qu'il soit utile de m'y arrêter davantage ici.

Quelquefois, les troubles de la nutrition ou de l'innervation sont purement locaux, et la diminution de l'excitabilité du col est indépendante de toute affection anémique ou de toute affection nerveuse.

Il est quelquefois difficile de saisir le point de départ de ces états morbides, en dehors des causes dont je vais parler tout à l'heure ; mais il m'est impossible de ne pas admettre leur existence, car, au moment même où j'écris ces lignes, j'en ai un nouvel exemple chez une femme devenue grosse après huit années de mariage stérile, et dont l'infécondité n'a été combattue qu'au moyen des excitateurs capables de réveiller l'excitabilité du col de l'utérus.

Mais en dehors de la dépression générale des forces plastiques et des forces nerveuses, et en dehors aussi des états idiosyncrasiques du col utérin, les causes qui affaiblissent l'excitabilité de ce dernier sont : 1° la continuité des coïts incomplets ; 2° les excès vénériens.

Coït incomplet. — J'appelle coït incomplet, au point de vue de la femme, l'excitation voluptueuse sans réception de la liqueur spermatique dans ses organes.

Voyons les résultats que cette pratique entraîne.

Le désir et la volupté copulatrice éveillent, comme je l'ai dit plusieurs fois, la sensibilité de la matrice, et la préparent à recevoir l'excitation normale du sperme.

Si celle-ci fait défaut, alors que la femme prend une part active à la copulation, la sensibilité utérine, éveillée par la sensibilité érotique, réagit sur la mobilité d'une manière confuse, et sollicite des contractions sans suite et sans règle, contrairement à ce qui se passe sous l'influence des saccades spermatiques.

Si ces manœuvres se renouvellent et durent un certain temps, la sensibilité utérine finit par ne plus répondre qu'à l'excitation copulatrice, et à devenir étrangère à l'influence de l'excitation séminale.

L'habitude s'impose aux organes comme aux facultés de l'esprit.

L'affaiblissement de l'excitabilité du col n'est pas le seul dommage qu'entraîne le coït incomplet : les ulcérations si nombreuses aujourd'hui ne reconnaissent souvent pas d'autre cause ; on dirait une terre brûlée par le soleil qui, en l'absence d'une pluie bienfaisante, se fendille et se crevasse.

Mais revenons à notre sujet.

Si la femme n'apporte à la copulation que l'indifférence, l'excitabilité du col se perd comme toutes les fonctions qui ne sont point exercées; c'est ainsi que s'explique l'infécondité des femmes qui se marient après trente-cinq ans.

Mais, froides ou passionnées, on rencontre tous les jours des femmes qui, par une suite non interrompue de coïts incomplets, ont perdu l'aptitude à la fécondation.

Un de nos confrères avait borné à un enfant son ambition paternelle; pendant dix-huit ans, les relations maritales furent incomplètes, c'est-à-dire, que dans la crainte d'une nouvelle paternité, le mari éjaculait hors des organes de sa femme.

A dix-huit ans l'enfant mourut.

Le père voulut alors réparer cette perte; mais la nature le punit de l'avoir pendant si longtemps frustrée : ses efforts furent inutiles.

Les exemples de ce genre abondent.

Quelquefois l'utérus reprend sa sensibilité normale, soit par le fait seul de l'exercice de la fonction, soit à la suite d'un traitement sédatif ou excitateur, selon qu'il faut calmer l'excitabilité *érotique* de l'utérus ou réveiller son excitabilité *séminale.*

Excès vénériens. — Les abus des organes sexuels par la copulation peuvent avoir lieu de deux manières : ou le consensus intime reste étranger au rapprochement des sexes et le coït se réduit alors, selon l'expression de Champfort, au contact de deux épidermes : c'est la copulation des filles publiques; ou le consensus intime intervient par le désir, et la volupté est alors la conséquence, j'allais presque dire la récompense de cette intervention. Dans le premier cas, il n'y a abus que de l'organe copulateur, c'est-à-dire il n'y a abus que d'un tissu organique, dont les altérations sont celles de tout autre tissu analogue soumis aux mêmes influences; dans le second cas, au contraire, il y a abus du sens générateur, abus de tous ses attributs : désirs, tressaillements amoureux, volupté, etc., etc.

Pour les distinguer les uns des autres, je nommerai volontiers les résultats des premiers *excès copulateurs ;* et ceux des seconds, *excès voluptueux.*

La distinction que j'établis ici est très-importante, comme on va le voir par ce que je vais dire de l'influence de chacun de ces excès.

Je parlerai d'abord des excès copulateurs.

Avant les recherches de Parent-Duchâtelet, il était d'opinion courante que les prostituées étaient généralement stériles ; on ne se rendait pas un compte exact des motifs de cette infécondité, et, sans plus ample informé, on en faisait un attribut fatal de ce misérable métier.

Parent-Duchâtelet ne se contenta pas de raisons aussi légères, et il entreprit de donner une base solide à l'opinion, quelle qu'elle fût, que l'on devait se faire de l'aptitude des prostituées à la fécondation.

Ses recherches l'amenèrent à des résultats bien différents de ceux sur lesquels reposait la croyance commune ; s'il reconnut, en effet, qu'un petit nombre de prostituées parvient jusqu'au terme ordinaire de la gestation, il constata qu'en général ces malheureuses n'avaient point perdu l'aptitude à la fécondation. Soit qu'elles le provoquent par des moyens criminels, soit que les circonstances anormales de leur vie de débauche et de désordres le favorisent, un avortement plus ou moins précoce est le résultat ordinaire de leur conception. Sans nous arrêter à l'avortement provoqué par des manœuvres coupables et dont personne ne met en doute la fréquence, je rappellerai, comme confirmant les idées que j'ai déjà émises sur les avortements précoces et dont j'aurai plus loin à étudier l'étiologie, je rappellerai le passage suivant du livre de Parent-Duchâtelet, qui contient en même temps l'opinion d'un des hommes les plus compétents en embryologie, de Serres : « J'ai parlé plus haut, dit Parent-Duchâtelet, de l'irrégularité de la menstruation chez quelques prostituées et des interruptions que présentait chez elles cette évacuation dans une foule de circonstances ; ne pourrait-on pas les attribuer à une conception et à une véritable grossesse ? Cette opinion, qui a été émise devant moi par plusieurs médecins et physiologistes distingués, acquiert une grande probabilité par les observations faites par M. Serres, lorsque les prostituées étaient soignées dans une des divisions de la Pitié. Je transcris ici les réponses que cet académicien fit à mes questions : « Les » pertes abondantes sont rares chez ces femmes, mais les plus » jeunes ont souvent des retards dans leurs règles, qui se terminent par l'expulsion de ce qu'elles appellent un *bondon*. » Pendant deux années je ne fis pas attention à cette expression ; mais, ayant dirigé mes recherches sur l'embryologie, » j'examinai avec soin ces productions, et il me fut facile d'y » reconnaître tous les caractères de l'œuf humain. J'ai pu, » dans un court espace de temps, en recueillir un grand nombre, qui tous étaient sortis à une époque qui indiquait une » conception de quatre à cinq semaines ; c'est toujours sur des » filles de dix-huit ans que j'ai pu faire ces observations (1). »

Cette dernière phrase semblerait indiquer que l'exercice prolongé du métier de prostituée fait même perdre le triste privilége de l'avortement précoce par l'absence complète de toute conception ; cependant, il est d'une notoriété incontestable que, lorsqu'une de ces malheureuses dit adieu au lupanar, se marie ou rentre dans les conditions d'une vie régulière, non-seulement elle montre, comme toute autre femme, l'aptitude à la fécondation, mais encore elle retrouve la faculté de porter à terme le fruit de sa conception, et de lui communiquer une vitalité qui n'est pas inférieure à celle des autres enfants.

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(1) Parent-Duchâtelet, *De la prostitution dans la ville de Paris*, 2e édit., t. I, p. 235 et 236.

Comme on le voit, les excès copulateurs ne déshéritent la femme, ni dans le présent ni dans l'avenir, de ses droits à la maternité ; seulement ces excès, se produisant au milieu de circonstances générales ou spéciales qui prédisposent à l'avortement d'une manière étrange, font classer les malheureuses qui les commettent, dans une partie du cadre nosologique où elles n'ont que faire, alors qu'elles devraient trouver place dans une division adjacente.

En est-il de même pour les excès amoureux ? Je ne le pense pas, et c'est cette différence dans les résultats amenés d'un côté par les excès copulateurs, et de l'autre par les excès voluptueux, qui m'a fait considérer comme très-importante la distinction que j'ai établie entre eux.

Les quelques considérations qui vont suivre se rapportent à tous les excès voluptueux, qu'ils soient produits par le coït ou par la masturbation.

Sous le rapport des excès voluptueux par le coït, Paris est, sans contredit, la ville d'Europe qui offre le plus vaste champ à l'observation. Par l'état de ses mœurs, par la tournure de son esprit, par son amour du luxe, par les appâts sans nombre dont elle entoure les plaisirs, et par l'hospitalité qu'elle offre aux étrangers et que ceux-ci payent généreusement, Paris possède une classe de femmes, intermédiaires entre la prostituée et la femme honnête, qui, tout en prenant des amants par intérêt et par espoir de lucre, se réservent le droit de les choisir, et se sauvegardent ainsi un excitant à la copulation autre que le gain. On prévoit que je veux parler de ces femmes entretenues et de ces femmes de théâtre que l'on ne rencontre que défigurées dans les autres capitales, et dont Paris possède des types aussi nombreux que variés.

Ces femmes, quel que soit le nom pompeux sous lequel elles cachent leur métier, ne font pas autre chose que de la prostitution clandestine, et, comme les prostituées soumises à la surveillance de la police, elles commettent des excès copulateurs ; mais, se séparant ici de leurs rivales des rues, elles apportent dans ces excès un élément de plus, le plaisir. A leur début dans la carrière elles ont fréquemment des conceptions, et il n'est pas rare, quand elles consentent à cesser leurs orgies, leurs veilles remplies par la débauche, et à se mettre en garde contre les chutes et les coups très-fréquents dans leur position, il n'est pas rare, dis-je, de les voir arriver au terme ordinaire de la grossesse. Mais, après un temps plus ou moins court de cette vie exubérante de plaisirs et de voluptés, elles perdent toute aptitude à la fécondation, et ne rendent même plus le *bondon* des filles publiques.

Contrairement à ce qui arrive chez les prostituées, elles ne recouvrent pas, en général, la faculté procréatrice lorsqu'elles rentrent dans le calme de la vie conjugale, de telle sorte qu'on peut dire que les excès voluptueux compromettent, chez la femme, les droits à la maternité, non-seulement dans le présent, mais encore dans l'avenir.

J'ai acquis la conviction que je viens d'exprimer en interrogeant plus de 200 de ces femmes, dont les unes étaient dans leurs débordements, et dont les autres s'étaient mariées ou vivaient maritalement avec un seul homme.

Sur les 200 femmes dont j'ai recueilli les aveux, qu'elles n'avaient aucun intérêt à fausser, il m'a été permis d'examiner les organes génitaux d'au moins 150 d'entre elles, et, chez la majorité, il m'a été impossible de rattacher leur stérilité à une lésion organique quelconque. Chez presque toutes, la menstruation était régulière et éloignait la pensée d'une affection même légère du côté des ovaires et des trompes; l'utérus n'accusait d'états morbides par aucun des signes qui, d'ordinaire, les décèlent; enfin, le col de la matrice, examiné au spéculum, n'offrait dans sa forme, dans sa couleur et dans sa position, aucune altération capable de me rendre raison de la stérilité.

C'est alors que je pensais à la possibilité d'une lésion vitale, et que je songeais que peut-être la sensibilité, et par suite l'excitabilité utérines s'étaient émoussées et usées dans les excès mêmes auxquels l'une et l'autre avaient été soumises.

Le toucher et l'examen au spéculum ne pouvant rien me révéler, je n'eus d'autre ressource que de recourir à la thérapeutique, et de lever ainsi, par les résultats qu'elle me donnerait, les difficultés du diagnostic. L'électricité fut évidemment l'agent qui sollicita le premier mes préférences; ce fut à lui, en effet, que je demandai d'abord la confirmation de mes soupçons.

J'expérimentai pour la première fois sur une jeune femme de vingt-trois ans, petite, nerveuse et douée d'un penchant très-prononcé pour les plaisirs de l'amour. Élevée à la pension des légionnaires de Saint-Denis, elle avait une culture d'esprit qui contribuait à entretenir et à surexciter ses instincts vénériens. Dès sa sortie de la maison d'éducation, c'est-à-dire à dix-huit ans, elle était devenue femme entretenue et avait parcouru tous les échelons de débauche et d'orgies dont est fatalement accidentée la vie de ces malheureuses. Je la connus alors qu'elle était la maîtresse d'un de mes amis, qu'elle quitta bientôt pour s'attacher à un acteur en renom de Paris, avec lequel il lui vint l'étrange pensée de se marier. Elle crut que pour décider son amant à accomplir cet acte, il lui fallait l'excuse d'un enfant, et que, semblable à l'amour du poëte, son titre de mère lui ferait aux yeux de son mari une nouvelle virginité. Que ce motif fût légitime ou chimérique, la jeune femme ne rêva plus, dès ce moment, que grossesse; dans son désir de réaliser un vœu toujours déçu, elle se rappela qu'à une époque où la gestation lui eût été une charge, je l'avais interrogée et examinée au point de vue de sa stérilité, et elle pensa qu'ayant dirigé mes études de ce côté, je pourrais lui rendre une faculté qui était alors le but unique de toute son ambition. Elle vint me voir. Aucun trouble général, aucune lésion locale de l'appareil générateur, ne pouvant me rendre compte de cette inaptitude à la fécondation, je m'arrêtai, comme je l'ai dit plus haut, à la pensée d'une altération vitale de l'utérus qu'expliquaient suffisamment d'ailleurs les excès vénériens précédemment commis. En conséquence, m'appuyant sur les succès obtenus par quelques praticiens au moyen de l'électricité (1), j'entrepris mon expérience dans le double but de contrôler un diagnostic difficile, et de tracer les limites d'action d'une ressource thérapeutique préconisée jusqu'alors sans indication précise.

Je me servis d'une pile à aimant de l'invention de MM. Bréton frères ; l'un des pôles était appliqué sur l'abdomen de la jeune femme, tandis que l'autre, armé du pinceau métallique, fut immédiatement porté sur le col de l'utérus, à travers un spéculum de verre, pour isoler la vulve et les parois vaginales.

Pendant un mois et plusieurs fois par semaine, je soumis la jeune femme, ainsi qu'il vient d'être dit, à l'action du courant électrique ; les séances duraient de dix à vingt minutes. Pendant tout le temps du traitement, le coït avait été suspendu, et la malade soumise à une très-grande régularité dans le régime et dans les mœurs. Au bout d'un mois de cette médication, que j'exigeais très-rigoureuse, je permis le rapprochement sexuel qui, cette fois, amena une conception. La femme arriva au terme ordinaire de la grossesse ; l'accouchement n'offrit rien d'anormal, et l'enfant, qui a aujourd'hui vingt ans, jouit de la santé la plus parfaite.

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(1) Voyez Duchenne, *De l'électrisation localisée et de ses applications à la pathologie et à la thérapeutique*. 3e édit., Paris, 1872, in-8.

Cette observation se complète par quelques détails qui viennent encore à l'appui de ma manière de voir.

L'amant, comme aurait dû le prévoir la malheureuse femme, si l'illusion n'était l'essence même de la nature humaine, et la légèreté d'esprit celle de ces infortunées qu'Alphonse Esquiros appelle si poétiquement les *Vierges folles*, l'amant ne voulut pas légitimer l'enfant par le mariage, et ce refus rompit naturellement les liens qui l'unissaient à sa maîtresse. Celle-ci reprit la vie de femme entretenue, et la stérilité marqua de nouveau le retour à cette existence d'excès de toutes sortes.

Sans doute ce fait n'a peut-être pas toute la valeur qu'on est en droit d'attendre, et il faut probablement faire une part à la régularité du régime et au repos de l'organe sexuel, circonstances éminemment favorables, comme je l'ai dit plus haut, au retour de la faculté génératrice après des excès copulateurs. Certainement, je suis le premier à reconnaître l'influence qu'ont pu et même qu'ont exercée réellement ces compagnes ordinaires de l'aptitude à la fécondation ; mais quand je me rappelle les faits assez nombreux de femmes qui, après des excès voluptueux prolongés plus ou moins longtemps, n'ont pu retrouver leur fécondité dans le calme d'une vie régulière ; quand je pense à la stérilité qui, pendant de longues années, succède à des excès de masturbation, alors que la malheureuse victime les rachète par un ardent désir de maternité constamment déçu au milieu des conditions les plus heureuses du mariage, je me demande si le repos des organes sexuels, si la régularité des rapprochements amoureux, en un mot, si de meilleures conditions sociales ont bien réellement, après des excès voluptueux, l'influence heureuse qu'il n'est pas possible de leur contester après les excès copulateurs. Ainsi que je viens de le dire, des exemples nombreux m'autorisent à ne pas leur accorder une importance trop considérable, et je pense que l'art doit bien plutôt compter sur les moyens thérapeutiques qu'il met directement en usage, que sur des prescriptions hygiéniques qui peuvent seconder le traitement, mais non en constituer la base.

Celle-ci doit être, à mon sens, puisée dans l'électricité.

Depuis l'observation que j'ai longuement rapportée plus haut, j'ai employé cette médication un nombre assez considérable de fois, avec des chances diverses de succès. Sans doute, ce moyen n'est pas infaillible, mais il réussit six fois sur dix; et même, dans beaucoup de cas où je l'ai vù échouer, la lésion vitale du col de l'utérus s'accompagnait d'une constitution misérable, d'un affaiblissement des forces de l'organisme, qui n'étaient probablement pas sans influence sur l'inertie utérine, et qui, de leur côté, réclamaient une médication générale fortifiante et tonique. D'ailleurs, une médication qui réussit dans plus de la moitié des cas où elle est employée mérite une place honorable dans la thérapeutique; je n'hésite donc pas à la réclamer pour l'électricité dans les circonstances qui nous occupent.

La lésion vitale qui fait le sujet de ce paragraphe, c'est-à-dire l'affaiblissement de l'excitabilité utérine, n'est pas toujours amenée par des excès voluptueux, soit de coït, soit de masturbation; toutes les causes qui président aux névroses peuvent lui donner naissance, et ces causes sont quelquefois si obscures que le diagnostic direct de l'inertie du col est presque impossible. Ni au toucher, ni à l'examen au spéculum, rien ne révèle l'existence d'une lésion vitale; une leucorrhée n'est pas un signe auquel il faille attacher quelque importance, car il est de bien réelles inerties utérines sans flueurs blanches, et des flueurs blanches très-abondantes sans inertie utérine.

Comme je l'ai déjà dit, on n'a que le *criterium* de la thérapeutique; aussi, dans tous les cas où la stérilité d'une femme ne trouve son explication ni dans une altération appréciable d'une partie quelconque de l'appareil génital, ni dans les conditions générales de l'organisme nécessaires au libre exercice de la faculté procréatrice, on doit diriger un courant électrique du côté du col de l'utérus, d'autant mieux que ce moyen, alors même qu'il échoue, ne compromet ni la santé générale de la malade, ni les fonctions génitales elles-mêmes. Si des excès de coït ou de masturbation entrent dans l'histoire des antécédents de la femme, la lésion dont je parle peut être légitimement admise, et alors l'électricité doit être employée avec plus de confiance que dans les cas où le diagnostic est pour ainsi dire négatif.

Il est évident que si l'inertie utérine est liée à quelque trouble des fonctions générales, ainsi que je le signalais plus haut à l'occasion de certains faits observés par moi, il est évident, dis-je, qu'à l'emploi de l'électricité il faut ajouter la médication nécessaire pour combattre ces troubles, et remplir toutes les indications que des états spéciaux peuvent réclamer.

Mais ces préceptes sont trop élémentaires pour m'arrêter davantage, et j'ai hâte d'arriver à la seconde forme que présentent les lésions vitales du col de l'utérus, c'est-à-dire à l'augmentation de son excitabilité.

Augmentation de l'excitabilité du col de l'utérus. — J'ai dit précédemment qu'aucun lien direct n'unissait l'organe récepteur du sperme et l'appareil copulateur, et que, par conséquent, on ne pouvait pas mesurer le degré de la vitalité utérine sur l'énergie des jouissances érotiques ; j'ai cependant fait observer que la matrice et l'appareil sensuel avaient nécessairement entre eux des rapports de voisinage, et étaient l'un et l'autre soumis aux lois de la sensibilité générale ; que, par conséquent, sans établir une échelle de gradation commune à tous deux, on pouvait jusqu'à un certain point préjuger l'activité de l'une par la puissance de l'autre.

Ces rapports entre les spasmes cyniques et ceux du col utérin, qui découlent, je le répète encore, non d'une sympathie directe, mais des lois générales de l'économie, ont été de tous temps notés, non-seulement par les médecins, mais encore par les poëtes. Mercurialis, à l'occasion de deux vers de Lucrèce, se range à l'avis de l'auteur de *la nature des choses*, et reconnaît que, par l'artifice de certains mouvements, la femme obtient l'infécondité qu'amènent les spasmes voluptueux : *Est et aliud quod peto*, dit-il, *audiatis sine risu*, *scilicet forma et ratio concubitus; quia si mulieres in concubitu retractent clunes et frequenter agitent*, *non concipiunt. Rationem adfert Lucretius philosophus* (IV De naturâ) *his duobus versibus :*

Eicit enim sulci recta regione viaque
Vomerem, atque locis avertit seminis ictum.

Hac ratione, dicebat Lucretius, doctas meretrices frequenter clunes agitare, non ut delectentur, sed ut non fiant gravidæ.

Bischoff n'est pas moins explicite que Mercurialis : « Comme les deux actes, dit-il, l'éjaculation et les mouvements de la matrice n'ont probablement lieu qu'au moment de la plus vive excitation, l'une des causes les plus fréquentes de la stérilité d'un si grand nombre d'accouplements pourrait bien être le défaut de coïncidence entre eux, qui s'oppose à ce que le sperme entre dans la matrice (1). »

Comme on le voit, non-seulement l'existence des spasmes utérins, mais encore leur coïncidence avec les spasmes cyniques ont été depuis longtemps reconnues, et l'on s'étonne que, devant une explication si naturelle de la stérilité de certaines femmes, des écrivains se soient égarés à la poursuite d'une harmonie d'amour, et n'y aient vu qu'une union mal assortie de tempéraments, de passions, d'inclinations, que sais-je?

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(1) Bischoff, *Traité du développement de l'homme*, traduit de l'allemand par A.-J.-L. Jourdan. Paris, 1843, p. 24.

Mais ne revenons plus sur une théorie imaginaire qui s'évanouit au flambeau du réalisme qui éclaire aujourd'hui la science, et reconnaissons qu'en s'appuyant sur les données générales de la physiologie on peut prévoir, sinon prédire à coup sûr, les cas où la matrice sera, pendant le coït, agitée de mouvements spasmodiques.

Ces prévisions, on le comprend, se tirent des circonstances mêmes qui augmentent l'excitation érotique ; les unes morales, comme l'amour comprimé, la lecture des romans, les concerts, les spectacles, etc.; les autres physiques, telles que le tempérament, les habitudes de mollesse, la répétition fréquente du congrès, etc.

Mais, je le répète encore, parce qu'on ne saurait trop le redire, les spasmes cyniques n'impliquent pas fatalement les spasmes utérins ; de même que les premiers peuvent atteindre une activité considérable sans la manifestation des seconds, de même ceux-ci peuvent se produire au milieu du calme d'un coït indifférent, et même au milieu des émotions déprimantes d'un coït forcé.

Cependant, quelle que soit la froideur que la femme apporte à la copulation, comme il se produit dans ses organes sexuels, par la seule présence de la verge, une action, toute locale si l'on veut, mais qui, prolongée, finit quelquefois par se changer en excitation voluptueuse, on peut admettre que la même influence se fait aussi sentir sur l'utérus, et que le coït devient ainsi la cause occasionnelle de mouvements spasmodiques.

Mais, sans nous arrêter davantage à une influence locale ou de voisinage dont il importe de ne pas exagérer l'importance, il faut reconnaître que l'utérus est soumis, comme tous les autres organes, aux lois de l'innervation générale, et qu'à ce titre il peut être affecté d'un excès d'irritabilité qui, sous l'action de son excitant naturel, le sperme, montera jusqu'à l'état spasmodique.

Ce phénomène, appréciable dans les organes de la vie de relation, est inaccessible à nos sens dans les organes de la vie organique ; mais son existence ne peut être mise en doute ; c'est donc dans les causes multiples qui agissent sur l'innervation générale qu'il faut aller chercher les motifs de l'irritabilité et, par suite, de l'excès d'excitabilité du col utérin sous l'action excitatrice du jet spermatique.

Je n'ai point à énumérer ici toutes les circonstances qui agissent sur l'innervation générale ou sur quelque point isolé de cette innervation ; il me suffit d'en indiquer l'influence, et je renvoie, pour leur étude, aux traités généraux ou particuliers de pathologie.

Cette surexcitabilité du col de l'utérus n'a pas, sur la fécondation, une influence aussi fâcheuse que l'absence de sa vitalité. Si, en effet, les spasmes utérins semblent obéir à la loi qui règle l'exaltation des voluptés vénériennes, l'âge, les habitudes, la satiété, les distractions, les préoccupations d'esprit, la fatigue corporelle, etc., en modérant celle-ci, calment aussi les premiers.

Si, au contraire, — et il en est le plus souvent ainsi — les spasmes utérins sont des phénomènes morbides de l'innervation, soit générale, soit locale, on leur oppose avec avantage tantôt les stupéfiants : opium et tous ses alcaloïdes, belladone, jusquiame, etc.; tantôt les sédatifs : les bromures et le chloral ; tantôt les antispasmodiques, parmi lesquels on donne la préférence à l'asa fœtida, au castorum et à la valériane, comme ayant une action en quelque sorte spéciale sur l'organe gestateur.

Les uns et les autres peuvent également être administrés en lavement ou portés directement sur le col de l'utérus au moyen d'un tampon d'ouate.

Enfin les bains prolongés et, dans quelques circonstances, l'hydrothérapie sont des moyens qui complètent cet arsenal thérapeutique.

Je dois ajouter que, pendant la médication, les rapports sexuels doivent être suspendus.

§ IV. — Corps étrangers dans le col de l'utérus.

Sans parler des productions morbides, telles que tumeur, polype, mucosités durcies, etc., qui m'ont déjà occupé à l'occasion de l'oblitération accidentelle du col de l'utérus, je dois signaler la possibilité de l'introduction, dans la cavité du col, d'un corps étranger, venu du dehors. Mais la présence de ce corps étranger, pressant sur une muqueuse et contre un organe aussi vasculaire que l'utérus, ne tarderait pas à produire des accidents très-graves; par conséquent, la stérilité qu'elle déterminerait serait excessivement passagère, et tellement liée à un de ces états aigus dont j'ai avec soin évité l'histoire, que je crois inutile de m'arrêter sur des accidents dont il suffit d'écrire le titre, pour en comprendre tout à la fois l'importance et le traitement.

§ V. — Altération de position du col de l'utérus.

Si l'on se rend bien compte du mécanisme par lequel le fluide séminal passe de l'organe mâle dans l'organe femelle, on comprendra comment une déviation du col de l'utérus devient facilement une cause de non-fécondation. De plus, en réfléchissant aux conditions diverses qui peuvent rompre les rapports d'opposition du méat urinaire de l'homme et du museau de tanche, on explique, comme je l'ai dit plus haut (1), beaucoup de faits qui paraissent étranges, tels que la conception après un long temps de stérilité, ou la fécondation facile avec un individu et impossible avec un autre, etc.

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(1) Voy. la page 504.

Je ne prétends pas dire que toutes les bizarreries signalées dans les résultats de la fonction génératrice trouvent leur explication dans une altération des rapports de l'organe mâle et de l'organe femelle; mais j'estime que le nombre de ces bizarreries serait de beaucoup diminué si, dans leur appréciation, on tenait un plus grand compte de la position du col utérin considérée, non pas tant d'une manière absolue que relativement à la verge pendant le coït.

L'absence de cette constatation est peut-être le motif qui a empêché d'accorder à cette circonstance toute la portée qu'elle possède, car l'utérus et, par suite, son col subissent, pendant la copulation et à l'insu de la femme, des mouvements qui altèrent les rapports d'opposition qui doivent exister entre l'ouverture de la verge et celle du museau de tanche, pour que la fécondation s'accomplisse.

Incontestablement il est facile, dans la majorité des cas, de reconnaître une déviation utérine permanente; il ne viendra à l'esprit de personne de contester un déplacement, quand, par exemple, le col de la matrice sera appliqué contre la paroi abdominale, ou que, recourbé en arrière, il présentera son ouverture à la concavité du sacrum; il ne viendra également à l'esprit de personne de ne pas admettre une inflexion de l'utérus, quand celui-ci, incliné sur lui-même, formera tumeur au cul-de-sac du vagin.

Ces déplacements sont à ce point manifestes et tellement grossiers, pour ainsi dire, qu'ils sont aisément constatés et reconnus par le doigt le moins exercé au toucher vaginal.

Mais, comme je le disais tout à l'heure, il est des déplacements qui ne se produisent qu'à l'occasion du coït; que la copulation voit naître et disparaître avec elle; que la pathologie ordinaire peut bien dédaigner, parce qu'ils n'ont aucune influence sur la santé de la femme, mais dont la pathologie spéciale de la stérilité doit tenir grand compte, puisqu'ils se montrent au moment même où la position normale de l'organe est le plus nécessaire.

Ces déplacements passagers et fugaces, qui ne laissent aucune trace après la copulation qui en fournit tout à la fois l'occasion et le mécanisme, ont peu attiré l'attention jusqu'ici, parce que, je le répète, ils ne portent aucune atteinte à la santé générale de la femme. Cependant ils sont bien réels, et je vais essayer de montrer que, presque toujours, il est possible de les reconnaître aussi sûrement qu'une déviation permanente.

Leur histoire est nécessairement distincte de celle des déplacements fixes ; je dois donc les examiner séparément et faire ainsi deux classes, dans les altérations de position de l'utérus, que, pour prévenir toute équivoque, je distinguerai en :

A. Déplacements mobiles ;

B. Déplacements permanents.

A. — **Déplacements mobiles.**

Il est peu de femmes dont l'utérus et surtout le col se trouvent exactement dans l'axe du vagin, et qui, à une exploration attentive, ne décèlent une déviation légère, tantôt en avant, tantôt en arrière, ou tantôt sur les côtés ; mais cette déviation est insuffisante pour produire la stérilité, ou, en nous servant d'un langage explicatif du phénomène, pour empêcher le passage du sperme de la verge dans la matrice, car beaucoup de ces femmes arrivent à la conception.

Chez celles dont le résultat de la copulation est négatif, et qui n'ont pas d'autres motifs de stérilité, il faut admettre que cette déviation légère s'accroît, pendant le coït, au point d'altérer assez profondément les rapports d'opposition de la verge et du museau de tanche pour ne plus permettre la transmission du sperme de celle-ci dans celui-là.

Ce déplacement ne se peut produire que par une mobilité extrême de l'utérus, au moyen de laquelle l'organe gestateur subit l'influence des mouvements divers qu'exécute le bassin; cette mobilité est presque toujours constatable en dehors du coït, grâce aux différences de position qu'affecte le col utérin selon la situation que l'on donne à la femme soumise au toucher vaginal.

Cette mobilité est amenée par diverses causes : tantôt elle est due à la laxité des tissus qui doivent maintenir la matrice en place; tantôt elle s'explique par l'engorgement d'un point de l'utérus qui, insuffisant pour déterminer un déplacement permanent, entraîne tout l'organe par son propre poids, lorsqu'une position favorable du bassin lui vient en aide; tantôt enfin la cause de ce mouvement de bascule siége dans un des deux ovaires.

Pendant le coït, l'utérus se déplace selon la position que la femme prend pour l'accomplir; aussi, comme je le disais plus haut, on peut, en reproduisant cette position, constater directement la déviation utérine. Une mère de quatre enfants, dont les rapports sexuels ont toujours un résultat négatif dans la position horizontale, a été fécondée quatre fois, alors que le bassin se trouvait dans la position verticale. En cette position, le col de l'utérus était bien dans l'axe du vagin; mais dès que la femme se couchait, on constatait une version très-prononcée, tantôt en avant, tantôt en arrière, tantôt sur les côtés, selon qu'elle se mettait sur le dos, sur le ventre ou sur les flancs. Cette mobilité en tous sens est incontestablement due à une grande laxité des ligaments.

Quand, au contraire, la direction du déplacement est déterminée par l'augmentation de poids d'un des deux ovaires ou d'une portion de l'utérus engorgée, la déviation de la matrice, on le comprend, ne se produit que dans une seule position. Ici encore la constatation du déplacement est facile, et même, dans quelques cas, la cause peut en être reconnue par le toucher rectal.

S'il fallait admettre, avec Hippocrate, que chez les femmes chargées d'embonpoint, la stérilité est due à une déviation de l'utérus amenée par la pression que l'épiploon excerce sur l'organe gestateur, on pourrait supposer le même pouvoir à la vessie distendue par l'urine et à l'intestin gorgé de matières fécales. Huguier est même aller jusqu'à ériger en principes de thérapeutique contre les déplacements utérins la rétention des urines dans la vessie et la conservation des excréments dans le rectum ; mais ces moyens sont tout aussi incapables de redresser un utérus renversé que de produire le renversement du même organe. Chez la femme dont j'ai parlé plus haut, et dont la matrice avait une mobilité si grande, la réplétion du rectum et celle de la vessie étaient sans aucune influence, ainsi que j'ai pu m'en assurer plusieurs fois en pratiquant le toucher, la femme étant debout.

Je crois donc que les déplacements mobiles de l'utérus pendant le coït naissent de la position que prend la femme, et s'expliquent par l'une des deux circonstances que j'ai indiquées, ou par toutes les deux à la fois, c'est-à-dire laxité des ligaments et inégalité de poids sur un point quelconque de l'organe gestateur.

Sous le rapport de la stérilité, ces accidents n'ont aucune gravité, puisqu'ils n'ont pas empêché la femme dont je parlais tout à l'heure de devenir mère quatre fois ; c'est qu'en effet il suffit, pour contre-balancer leur influence, de conseiller à la femme une position convenable pendant le coït, et même, au besoin, d'immobiliser l'utérus au moyen d'une éponge ou d'un tampon d'ouate.

Quant à la cause du déplacement, qu'il est utile de combattre, moins pour obtenir la fécondation rendue facile par les quelques précautions que je viens d'indiquer, que pour prévenir des accidents ultérieurs plus redoutables, il faut d'abord en rechercher la nature et y conformer sa thérapeutique.

B. — **Déplacements permanents.**

La détermination de l'axe de l'utérus peut être intéressante sous le rapport anatomique, mais elle est à coup sûr d'une minime valeur sous celui de la pathologie, de celle surtout qui fait de la stérilité le sujet de ses études ; c'est qu'à ce point de vue cet axe est celui du vagin, qu'il est toujours facile d'apprécier malgré les variations de capacité auxquelles est soumis le *conduit de la pudeur ;* en d'autres termes, c'est que l'axe de l'utérus se confond avec celui du vagin, ou pour mieux dire, c'est que ces deux organes n'ont qu'un seul axe, partant du milieu de la vulve et allant aboutir au sommet de la matrice, après avoir passé par l'ouverture du museau de tanche et le canal qui lui fait suite.

Les déplacements de l'utérus dont il me reste à m'occuper, se font tantôt dans la direction de cet axe et tantôt en dehors du plan tracé par cet axe.

Cette distinction donne naissance à deux groupes de déplacements qui, eux-mêmes, se subdivisent en deux genres, selon que la totalité de l'organe ou seulement la portion la plus mobile, c'est-à-dire le corps, prend part à la déviation.

La direction des déplacements constituant le premier groupe est nécessairement celle de l'axe du vagin, et les diverses variétés de la maladie ne peuvent être que des degrés plus ou moins prononcés de ces déplacements.

La direction, au contraire, des déviations composant le deuxième groupe se montre dans tous les sens ; mais pour la facilité de l'étude on a ramené toutes ces formes à quatre types principaux, selon que le déplacement se fait, par rapport au corps de l'utérus, en avant, en arrière, à gauche ou à droite.

Nous pouvons donc maintenant dresser le tableau suivant de tous les changements de position que subit la matrice.

PREMIER GROUPE. Déplacements selon l'axe du vagin.	*Premier genre.* De la totalité de l'utérus : *élévation exagérée ; abaissement et chute.*
	Deuxième genre. Du corps seulement : *renversement*, *inversion*, *introversion de la matrice.*
DEUXIÈME GROUPE. Déplacements hors de l'axe du vagin.	*Premier genre.* De la totalité de l'utérus : *antéversion*, *rétroversion*, *latéroversion.*
	Deuxième genre. Du corps seulement : *antéflexion*, *rétroflexion*, *latéroflexion.*

C'est dans cet ordre que je vais rapidement examiner ces diverses altérations de position, en indiquant, pour chacune d'elles, le mécanisme au moyen duquel le sperme est empêché d'arriver jusque dans la cavité utérine.

I. — DÉPLACEMENTS SUIVANT L'AXE DU VAGIN.

A. — *Déplacements de la totalité de l'utérus.*

Déplacement en haut. — Il est incontestable qu'une élévation exagérée de la matrice peut se produire à la suite d'une maladie de l'utérus, des trompes, des ovaires, et surtout, comme l'a très-bien indiqué madame Boivin (1) à la suite d'une péritonite ou d'une métro-péritonite, qui, par la formation de brides ou d'adhérences pathologiques, déterminent une fixité anormale de l'utérus. Cette élévation peut encore être amenée par une tumeur siégeant dans le bassin, et dont le volume, en s'accroissant, refoule tous les organes qui l'environnent; on comprend que d'autres causes analogues amènent le même résultat, et il ne peut venir à l'esprit de personne de contester la possibilité d'un pareil déplacement.

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(1) Madame Boivin, *Recherches sur les causes les plus fréquentes de l'avortement*. In-8, 1828.

Sans doute le phénomène doit être admis en tant que résultat d'une force pour ainsi dire mécanique; mais en présence des obstacles qu'opposent à ce déplacement la masse intestinale d'abord et le propre poids de l'utérus ensuite, est-il permis de supposer que cette élévation puisse être indépendante de toute lésion antérieure et se produire idiopathiquement, c'est-à-dire d'une manière essentielle? Je ne le pense pas, bien que le docteur Andrieux en rapporte une observation que sa brièveté seule m'engage à reproduire : « J'ai eu occasion, dit-il, de toucher une femme qui n'avait point eu d'enfants, chez laquelle il me fut impossible d'arriver jusqu'au col; ce ne fut qu'après avoir fait vider le rectum et la vessie, et avoir prescrit une course à pied à la suite d'un bain de deux heures, qu'il me fut possible d'atteindre, en pressant fortement sur l'hypogastre, une des lèvres du museau de tanche. Cette femme me demandait le moyen de devenir mère, et lorsque je lui déclarai que ce n'était point à l'aide de breuvages qu'elle pourrait arriver à son but, elle ne se présenta plus chez moi. Est-elle devenue enceinte? Je l'ignore (1). »

Comme on le voit, cette observation est nulle pour l'étiologie du déplacement, et ne peut être invoquée ni pour, ni contre l'essentialité de l'affection.

Sans doute il n'est pas facile de déterminer le point précis où commence l'état morbide et où finit l'état normal. La hauteur à laquelle se trouve le col est essentiellement variable; il n'est pas un médecin qui, sous ce rapport, n'ait rencontré des différences nombreuses, sans que la santé de la femme en fût le moins du monde troublée.

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(1) Andrieux, *Traité complet de l'impuissance et de la stérilité*. Brioude, 1849, p. 221.

Au point de vue spécial qui nous occupe, ces différences de situation n'ont pas également une importance bien grande et n'exercent qu'une influence minime sur la fécondation.

Cependant, si l'élévation de l'utérus était exagérée à ce point qu'un trop grand intervalle séparât le gland du membre viril et le museau de tanche, il pourrait arriver que le jet de la liqueur séminale, ayant à franchir un trop grand espace, eût le temps de se dévier de sa direction rectiligne, et allât ainsi se perdre dans le cul-de-sac du vagin.

Sans doute, la stérilité qui résulterait d'une pareille disposition anatomique ne serait que relative, car pour la prévenir il suffirait d'une verge dont la longueur serait en harmonie avec celle du vagin; mais cette harmonie est bien souvent irréalisable, et son application ne peut, dans l'immense majorité des cas, être conseillée par le médecin.

Heureusement cette infirmité est peu fréquente et rarement poussée au point d'empêcher la fécondation. Quand elle existe, elle est, comme je l'ai dit plus haut, liée à une affection de l'utérus, des trompes ou des ovaires; ou bien encore elle est amenée par la présence d'une tumeur ou par des adhérences, suites d'une péritonite ou d'une métrite. Dans tous ces cas, c'est à ces causes diverses qu'il faut adresser la médication, pour ne pas compromettre la santé générale de la femme dans des tiraillements inutiles et intempestifs.

Cependant il est permis de recourir à quelques moyens inoffensifs et dont l'action locale peut, en toutes circonstances, faciliter l'abaissement de l'utérus : tels sont, par exemple, les bains chauds longtemps prolongés, la marche, l'équitation, la danse, et enfin une ceinture épigastrique dont la pression s'exerce de haut en bas.

Hors ces moyens, j'estime dangereux et inutiles les tiraillements exercés sur l'utérus, soit directement, soit à l'aide d'un spéculum-ventouse, soit de toute autre manière.

Déplacements en bas. — Quand les déplacements de cette espèce sont peu prononcés, ils constituent bien plutôt une condition favorable qu'un obstacle à la fécondation, en ce qu'ils diminuent l'espace que doit franchir le jet de la liqueur séminale.

Quand ils sont plus considérables, quand l'utérus remplit la totalité ou la presque totalité du vagin, la copulation est rendue difficile et la fécondation devient aléatoire.

Enfin, quand le déplacement est complet, quand l'utérus pend au dehors de la vulve, le congrès et la fécondation sont également impossibles.

Comme on le voit, les déplacements de cette espèce, dont les trois degrés que je viens d'énumérer ont été désignés sous les noms d'*abaissement*, de *prolapsus* et de *chute de matrice*, exercent une influence néfaste sur la fécondité de la femme, sauf le premier degré qui peut constituer, comme je l'ai déjà dit, une condition favorable à la conception, surtout lorsque le congrès s'accomplit avec un homme dont la force d'éjaculation n'est pas considérable; cette circonstance, à laquelle on n'a pas donné toute l'attention qu'elle mérite, peut, dans quelques cas, expliquer la faculté procréatrice que certains individus, tels que le vieillard, le débauché usé avant l'âge, etc., montrent avec telles femmes et perdent avec telles autres. — C'est un chapitre de plus à rayer de l'histoire des bizarreries de la génération.

Quoi qu'il en soit, pour que la fécondation soit possible, il convient de la ramener dans les conditions ordinaires de son accomplissement, et pour cela faire, on repousse l'utérus dans l'intérieur et on le retient en place par des moyens contentifs, dont je n'ai point à m'occuper ici, et au premier rang desquels se trouvent les pessaires, les tampons d'éponge et les ceintures hypogastriques, dont je dirai tout à l'heure quelques mots à l'occasion des déplacements de l'utérus hors de l'axe du vagin, c'est-à-dire à l'occasion des versions.

B. — *Déplacement du corps seul de l'utérus.* — *Inversion.*

Le déplacement dont il s'agit ici est, sans contredit, le plus bizarre de tous ceux que subit l'utérus : le fond de celui-ci se déprime en cul de bouteille dans l'intérieur même de son corps, se précipite vers l'ouverture inférieure, s'y engage et vient faire hernie au museau de tanche. Tout le corps de la matrice peut ainsi s'invaginer et même, selon Dugès et madame Boivin (1), la portion la plus inférieure de la matrice, c'est-à-dire le museau de tanche, se retourner quelquefois elle-même.

Ce phénomène étrange se montre le plus souvent à l'état *aigu*, si je puis ainsi dire ; mais on l'a aussi observé à l'état *chronique*.

A l'état aigu, il est presque toujours amené soit par quelque manœuvre intempestive ou brutale d'obstétrique, soit par la brièveté du cordon ombilical, et s'accompagne d'accidents graves qui, en menaçant prochainement la vie de la femme, le font sortir du cadre de cet ouvrage.

Mais il n'en est plus ainsi quand le renversement de la matrice se produit en dehors de l'enfantement ; il est compatible, il est vrai, avec l'existence, mais il expose la femme à des dangers incessants et la prive des rapports conjugaux, contrairement à l'observation de fécondation que l'on trouvera plus loin, et contrairement au fait rapporté par M. Courty, d'une femme qui, dans cette position, pouvait se livrer au coït.

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(1) Madame Boivin et Dugès, *Traité pratique des maladies de l'utérus*. Paris, 1833, t. I, p. 221.

Il me faut donc arrêter un instant sur cet accident heureusement fort rare qui, malgré une étrange observation que je ferai connaître, est une cause fatale de stérilité.

Par cela même que le mécanisme de l'accouchement et les manœuvres obstétricales rendent le mieux raison de l'inversion de la matrice, la plupart des auteurs rattachent à ces causes le phénomène que nous étudions. Cependant Daïlliez cite un fait tiré de la pratique de Baudelocque, où le renversement se montra chez une jeune fille vierge (1), mais où malheureusement l'autopsie ne confirma pas le diagnostic du célèbre accoucheur. Ce cas, peut-être unique dans la science, vient à l'appui des idées de Puzos, qui admettait des inversions de cause interne. Je ne rapporte point le fait de Baudelocque, parce qu'il n'a qu'une demi-certitude et qu'il n'est pas, en effet, à l'abri de tout reproche sous le rapport du diagnostic.

Mais, si le renversement de l'utérus n'a jamais été observé, d'une manière authentique et directe, sur des femmes qui n'ont pas enfanté, il a été rencontré assez loin de l'époque de l'accouchement pour croire qu'il n'avait avec lui que des relations nulles ou tout au moins problématiques.

Bien plus, il existe un fait de fécondation avec renversement de la matrice, et cette observation est trop curieuse pour que je ne cède pas au désir de la consigner ici : « La femme de Julien Roussin, métayer à Chambresais, près Château-Gonthier, âgée de vingt-huit ans, accoucha fort heureusement d'un enfant bien portant au mois d'octobre 1777; mais la

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des leçons de Baudelocque sur le renversement de
i-8°, p. 38.

sage-femme, en la délivrant, renversa la matrice, et borna ses soins, faute de savoir, à la repousser dans le bassin. Dix mois après, la femme Roussin, qui n'avait éprouvé que des accidents très-simples, se soupçonna grosse, parce qu'elle éprouvait des dégoûts et des incommodités presque inséparables des premiers temps de la grossesse. Au terme de trois mois, elle ressentit dans le bas-ventre, et surtout dans les reins, de légères douleurs, qui augmentèrent graduellement jusqu'au cinquième mois ; alors elles devinrent très-fortes, elles expulsèrent une masse considérable, que MM. Thuilier, médecin, et Vager, chirurgien de Château-Gonthier, virent et reconnurent pour la matrice renversée. Sans croire à l'existence d'une grossesse, M. Vager tenta trois jours de suite, mais inutilement, la réduction de cette matrice; ne pouvant l'obtenir, il consulta de nouveau M. Thuilier et M. Paroissien, chirurgien, qui lui conseillèrent de la repousser seulement dans le bassin, comme l'avait fait la sage-femme, puisqu'on ne pouvait espérer de faire plus. Six jours après, la femme, qui ne se croyait plus enceinte, rendit un fœtus bien formé, long de 5 pouces, qui n'était nullement altéré, que M. Vager vit et examina presque à l'instant de son expulsion. M. Chevreul crut longtemps que la femme n'avait qu'un polype, que ses confrères de Château-Gonthier s'étaient trompés en le prenant pour la matrice; mais il leur rendit justice en 1782, après avoir examiné la femme et s'être assuré que le renversement de ce viscère existait réellement et était entier; alors il pensa que le fœtus s'était développé dans une des trompes (1). »

L'ouvrage auquel nous empruntons cette observation bizarre la fait suivre des observations de Moreau, auxquelles je ne puis mieux faire que d'adhérer. « Nous ne saurions, dit ce professeur, accepter cette explication. Si la conception avait eu lieu dans l'une des trompes, on n'aurait pas vu le fœtus sortir de la cavité du vagin, mais de l'un de ses conduits, dont les orifices, placés près du fond de l'organe renversé, se trouvaient en dehors de la vulve; ou, dans les essais qui furent tentés pour réduire l'utérus, on aurait trouvé l'une des trompes gonflée, son orifice dilaté. Rien de cela n'a été observé; nous serions porté à croire qu'il n'y a eu primitivement qu'une simple précipitation, et si plus tard le renversement s'est opéré, il n'a eu lieu qu'au moment de l'avortement. En adoptant cette supposition, tout le merveilleux disparaît. »

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(1) *Bibliothèque du médecin praticien*. Paris, 1843, t. I (*Maladies des femmes*), p. 364.

Quoi qu'il en soit de ce fait, peut-être unique dans la science, le renversement de l'utérus doit être considéré comme un obstacle radical à la fécondation, et dont, par conséquent, on doit, par tous les moyens possibles, tenter la réduction. Celle-ci n'est pas toujours facile, et la tumeur a, comme nous l'avons vu, une tendance très-prononcée à se reproduire. Aussi on doit s'estimer heureux de pouvoir contenir dans le vagin la matrice même renversée, afin d'éviter l'ablation de cet organe, opération dont quelques rares succès ne peuvent contre-balancer les nombreux revers, qu'elle soit faite par la ligature, ou par l'instrument tranchant.

II. — DÉPLACEMENTS EN DEHORS DE L'AXE DU VAGIN.

A. — *Déplacements de la totalité de l'utérus. — Versions.*

Depuis que Levret, par sa noble franchise à publier une erreur qu'il avait commise (1), a fixé l'attention sur l'antéversion, et depuis que Grégoire, chirurgien français, a compris dans ses leçons d'accouchement la description de la rétroversion, de laquelle Walter Wal fournit bientôt à G. Hunter l'occasion de donner une observation (1), l'étude des déplacements de l'utérus en dehors de l'axe du vagin a fait de très-grands progrès, quoique beaucoup de points de leur histoire soient encore enveloppés de doutes et de ténèbres.

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(1) *Journal de médecine et de chirurgie*, janvier 1783, t. LIX, p. 35 et suiv.

Est-il besoin de légitimer la place que je donne ici à ces déviations, et, par tout ce que j'ai dit précédemment, ne comprend-on pas le rôle important qu'elles jouent dans l'étiologie de la stérilité? Il n'est pas nécessaire, pour que l'infécondité se produise, que le déplacement atteigne des limites extrêmes, car j'ai rencontré des déplacements qui l'occasionnaient et qui respectaient, en même temps, toutes les autres fonctions qui, d'ordinaire, sont plus ou moins altérées par la pression que l'utérus exerce sur leurs organes.

La version est constituée par le déplacement de la totalité de l'utérus hors de l'axe du vagin, de telle sorte que le col de l'organe se trouve fatalement dans une direction opposée à celle qu'occupe le corps; c'est la position de cette dernière partie qui détermine la désignation que l'on donne à la déviation. Quand le corps de l'utérus se porte en avant, qu'il vient s'appuyer contre l'arcade du pubis, ou faire saillie à travers les parois de l'abdomen, le col se recourbe en arrière et porte plus ou moins son ouverture vers la concavité du sacrum; il y a alors *antéversion*. Quand au contraire le corps de la matrice est déjeté en arrière, le col vient s'appuyer contre l'arcade du pubis, et il y a *rétroversion;* enfin, quand le corps de l'utérus se porte à droite ou à gauche, le col se déplace dans un sens opposé, et il se produit alors une *latéroversion* à droite ou à gauche, selon la direction qu'a prise le corps.

L'obstacle à la fécondation qui naît de ces changements de position est tout mécanique; il est constitué par le défaut d'opposition harmonique entre le méat urinaire de l'homme et l'ouverture du museau de tanche, qui ne permet plus à la liqueur séminale de passer du premier dans la seconde, et qui la laisse inutilement se perdre dans les profondeurs du vagin. Dans la rétroversion et les latéroversions, l'arcade du pubis ne permettant pas au col de se recourber sur lui-même et opposant à son déplacement une limite qu'il ne peut franchir, l'éjaculation spermatique se fait contre le cul-de-sac du vagin, à la partie postérieure dans le premier cas, et sur les côtés dans les latéroversions. Dans l'antéversion, au contraire, la concavité du sacrum laissant un vaste champ de déplacement au col, celui-ci se recourbe plus ou moins, porte en arrière et en haut son museau de tanche, et présente au sperme qui vient le frapper l'angle qui se forme au point de sa courbure.

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(1) *Medic. Observations and Inquiries*, t. IV, p. 401.

Ce mécanisme est important à connaître, car au point de vue de la fécondation, le seul qui me doive occuper ici, il établit une différence notable entre la rétroversion et l'antéversion, non pas tant peut-être pour le traitement que pour la possibilité de la conception en dehors de toute thérapeutique, et par le seul effet de la position des conjoints pendant le coït.

Dans la rétroversion et les latéroversions (il est bien entendu que je fais la part des cas exceptionnels qui peuvent se présenter), le col de l'utérus, empêché par l'arcade du pubis dans son mouvement de bascule, ne cesse pas d'avoir le museau de tanche dirigé en bas, dans le sens où se fait l'ascension du fluide spermatique; seulement l'opposition harmonique entre la verge de l'homme et le col de la matrice est détruite par la déviation de celui-ci hors de l'axe du vagin, et par la persistance, au contraire, du membre viril dans la direction de cet axe. Il faut donc ou ramener le col dans l'axe du vagin et, par conséquent, dans celui de la verge, ou dévier celle-ci dans la direction du col, de manière à rétablir l'opposition harmonique des deux organes dans un axe accidentel, artificiel pour ainsi dire. — Ce dernier moyen est possible, comme je le dirai tout à l'heure.

Dans l'antéversion, au contraire, le museau de tanche est non-seulement dévié de son axe, mais encore il dirige son ouverture dans un sens diamétralement opposé à celui par lequel s'effectue l'ascension du sperme ; par conséquent, il ne servirait à rien de remettre les deux organes dans le même axe, si, au préalable, on n'avait pas ramené l'ouverture utérine dans sa direction normale, c'est-à-dire dans la direction de la vulve. L'intervention de l'art est donc d'une absolue nécessité, et sans elle, quelques efforts que fassent et quelque position que prennent les conjoints pendant le coït, la conception est radicalement impossible.

Sans doute, toutes les versions n'arrivent pas au degré extrême dont je viens de parler, et il en est de très-nombreuses qui sont sans aucune influence non-seulement sur la santé de la femme, mais encore sur sa faculté procréatrice. Ce n'est pas à dire pourtant que la condition d'opposition de l'organe mâle et de l'organe femelle puisse être éludée sans inconvénient, ou qu'une légère déviation de l'utérus soit sans importance pour le maintien de cette condition ; loin de moi cette pensée, car j'estime que la condition d'opposition est une nécessité absolue pour la fécondation, et que cette condition est rompue par la plus légère déviation utérine, en admettant que la verge reste exactement dans l'axe du vagin, ou par une déviation de la verge, quand c'est le col de la matrice qui reste dans cet axe. Les femmes adroites au coït et intéressées à des rapprochements stériles, savent très-bien toutes ces choses ; elles parviennent, avec un peu d'habitude, par un mouvement du bassin au moment de l'éjaculation, à rompre l'axe de la verge et du col de l'utérus.

Quand la déviation utérine est légère, il faut peu d'efforts pour amener la verge dans l'axe nouveau du col, et le hasard s'en charge souvent; si l'on réfléchit, en effet, aux conditions diverses au milieu desquelles le coït s'accomplit, même dans la vie maritale et la plus régulière, on admettra facilement qu'une de ces circonstances, en rétablissant momentanément les rapports d'opposition de la verge et de l'utérus, amène une fécondation qui eut été impossible sans cette circonstance fortuite et incomprise par les conjoints.

Quand la déviation utérine est plus prononcée, sans qu'elle aille cependant, pour la rétroversion, jusqu'à la retraite du col sous l'arcade du pubis, et pour l'antéversion jusqu'à la courbure en arrière du même col utérin, la fécondation est encore possible sans le secours de la médecine, mais à la condition cependant de certaines précautions prises par les conjoints au moment du coït. — On comprend que c'est de la posture dont je veux ici parler. — Le lecteur, par les explications que j'ai précédemment données, doit suffisamment saisir le mécanisme qu'il faut réaliser, pour qu'il soit inutile de m'appesantir davantage sur un sujet qui touche de trop près au domaine de la luxure.

Enfin, quand la déviation atteint des limites inaccessibles à toutes les précautions copulatrices, l'art doit intervenir et ramener les parties déplacées dans leur axe normal.

Mais ici apparaissent les véritables difficultés du problème, et des points litigieux se présentent en foule.

Je signalerai les principaux, ceux surtout qui touchent le plus directement à mon sujet.

Les déplacements utérins sont-ils essentiels, ou simplement les résultats d'un état morbide quelconque ?

Là est le point de départ de toutes les contradictions.

Si les déplacements de la matrice peuvent exister sans lésion organique, s'ils peuvent se produire par la seule force de la nature et persister par l'effet d'une circonstance fortuite, légère, comme la présence d'une anse intestinale, etc., il est incontestable que le redressement direct et mécanique est non-seulement utile, mais encore l'unique moyen de réussite.

Mais si le déplacement de l'utérus est amené et entretenu par une cause morbide, quelle qu'elle soit, le redressement mécanique est impuissant à remettre l'organe à sa place, et, dans beaucoup de circonstances, il est même compromettant pour la santé et quelquefois aussi pour la vie de la femme.

Comme on le voit, la question prend une importance pathologique qui n'est plus exclusivement de mon sujet, mais qui, cependant, l'intéresse assez vivement pour que je ne la laisse pas tout à fait dans l'ombre.

Les deux manières d'expliquer les déplacements utérins ont eu chacune son école et ses partisans. La première, celle qui consacre l'essentialité des déviations, a été soutenue, avec un certain éclat, en Angleterre, par Simpson, qui, conséquent avec ses principes, a imaginé un appareil auquel son nom est resté, et à l'aide duquel il ramène méçaniquement l'utérus dans sa position normale.

Les idées et l'instrument de Simpson (1) furent importés et adoptés en France par Valleix, qui fit subir aux unes et à l'autre des modifications inspirées par l'expérience et la profonde érudition qui distinguaient ce praticien.

Simpson de son côté, et Valleix du sien, proclamaient l'innocuité de leur méthode, et annonçaient des succès presque constants, non-seulement dans le redressement de la déviation, mais encore (et ici c'était le médecin anglais qui était le plus explicite) dans le traitement de la stérilité dépendant de ces déplacements.

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(1) Simpson, *Clinique obstétricale et gynécologique*, trad. par Chantreuil. Paris, 1874, article *Rétroversion de l'utérus*, p. 650.

Mais bientôt ces chants de triomphe furent troublés par la nouvelle de revers très-graves. « Non-seulement, disaient les contradicteurs, les instruments de Simpson et Valleix ne redressent pas la matrice, mais encore ils exposent la femme à des dangers qu'il est parfois impossible de conjurer. » Et coup sur coup, Cruveilhier et M. Broca présentèrent à l'Académie de médecine (1) des observations de femmes mortes à la suite de l'application du pessaire de Valleix.

Comme on le pense, l'émotion fut grande, et l'Académie de médecine voulut enfin édifier les praticiens sur une méthode thérapeutique que patronnaient deux hommes importants et honorables, mais contre laquelle se dressaient des faits terribles.

Ce fut M. Depaul qui, au nom d'une commission, porta les premiers coups, non-seulement aux instruments de Simpson et Valleix, mais encore à l'essentialité des déplacements utérins. A l'appui de sa thèse, il fournit des faits très-graves puisés dans la pratique même de Valleix, et la discussion qui s'engagea à la suite de ce rapport ne laissa aucun doute sur l'inanité et les dangers de ces moyens purement mécaniques.

Cependant il est incontestable que, durant tout le temps que l'utérus est soumis à l'action de la sonde, il demeure dans la position que l'instrument lui impose, et qu'il ne revient à sa position normale que lorsqu'il est de nouveau abandonné à lui-même.

Or, si l'on réfléchit que, dans beaucoup de cas, la déviation de la matrice est la cause unique de la stérilité de la femme ; que l'affection qui donne naissance au déplacement est par elle-même incapable de produire l'agénésie, et que dans quelques circonstances, une grossesse est un palliatif à ces affections, comme dans l'état atonique et certains engorgements partiels de l'organe gestateur, on est conduit à rechercher un moyen qui, en permettant le coït et en exonérant la femme de tous dangers, maintienne l'utérus redressé, sinon d'une manière constante, du moins pendant la durée de la copulation. La sonde de Simpson et le pessaire de Valleix ne remplissent aucune de ces conditions. Sans revenir sur les dangers qu'ils font courir à la femme, il faut reconnaître que le rapprochement sexuel est impossible pendant leur application, et que, par conséquent, les espérances qu'ils peuvent donner reposent sur la continuité du redressement qu'ils ont opéré, continuité qui est loin d'exister, ainsi que l'a prouvé la discussion de l'Académie de médecine (1).

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(1) *Bulletin de l'Académie de médecine.* Paris, 1854, t. XIX, p. 352 et 357.

Les pessaires ordinaires, non pas, bien entendu, les pessaires en *bilboquet*, dont la tige s'oppose au coït, mais les pessaires en *gimblettes*, répondent mieux au but que l'on se propose, car, pour l'effet que l'on veut produire, l'action principale du pessaire doit porter sur le col. Cependant, ces instruments offrent des inconvénients de plusieurs sortes, dont le plus grave, à notre point de vue, est la facilité avec laquelle ils se déplacent. Il ne faut pas avoir appliqué un très-grand nombre de pessaires pour savoir, en effet, que huit fois sur dix ces appareils quittent la position qu'on leur donne, basculent sur eux-mêmes et prennent une direction verticale, en abandonnant le col à l'irrégularité de ses déplacements.

De plus, en occupant une assez grande place dans la cavité vaginale, ils peuvent rendre le coït sinon complétement impossible, du moins le contrarier d'une manière assez notable pour forcer la femme à les enlever au moment de la copulation. L'effet que, sous ce rapport, les pessaires produisent, est de deux sortes : 1° ils gênent les mouvements et l'entière intromission de la verge dans le vagin ; 2° ils peuvent inspirer à l'homme un sentiment de surprise, d'effroi ou de dégoût qui lui rend le coït impossible. Je connais plusieurs faits de ce genre, et les femmes savent si bien l'impression que l'homme éprouve de la présence d'un pessaire au moment du rapprochement sexuel, que les unes l'enlèvent avant de s'abandonner aux attouchements amoureux, et que les autres s'abstiennent de toute copulation, si elles n'ont pas eu le temps de le faire disparaître.

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(1) *Bulletin de l'Académie de médecine*, t. XIX, p. 742 à 976, *passim*.

Sans nous arrêter à un sentiment de coquetterie dont, en définitive, il faut toujours faire la part chez la femme, les pessaires ont des inconvénients si graves que l'on s'occupe constamment, soit à les remplacer, soit à leur faire subir des modifications plus ou moins heureuses.

De ce nombre, et se rapprochant assez du but à atteindre, sont les pessaires à anneau de Hodge, de Meigs, de Sims, qui, occupant peu de place dans la circonférence supérieure du vagin, permettent la copulation et par suite la fécondation, comme Sims en cite des exemples.

A côté de ces pessaires dont l'emploi n'est pas toujours possible, je rappellerai un moyen simple qui m'a souvent réussi et qui répond à la double indication qu'il s'agit de remplir. Je veux parler du cylindre d'éponge préparé.

Après avoir constaté la direction et le degré du déplacement, on taille un cylindre d'éponge dont le volume doit à peu près égaler la moitié du diamètre vaginal, et dont la longueur doit être suffisante pour embrasser la moitié du col utérin ; on graisse le cylindre ainsi préparé pour en faciliter le glissement, et on le conduit, avec le doigt indicateur, derrière la déviation du col, de manière à lui faire occuper l'espace compris entre le col et la paroi vaginale que regarde le museau de tanche. Les mucosités vaginales, dont la sécrétion est augmentée par la présence de l'éponge, gonflent celle-ci, et, par suite de cette augmentation de volume, le col est repoussé et maintenu loin de la paroi vaginale contre laquelle il appuyait auparavant.

Sans doute, l'éponge est insuffisante si elle doit maintenir longtemps la déviation réduite, et surtout si elle a à vaincre une résistance trop énergique de la part de l'utérus; mais dans beaucoup de cas, si l'on ne peut recourir, par un motif quelconque, au pessaire de Meigs, de Hodge ou de Sims, le cylindre d'éponge rend des services, pourvu qu'il ne dépasse pas les lèvres du museau de tanche, et que la femme ne se livre pas à des exercices trop violents.

A côté du fait que j'ai précédemment raconté (1), et dans lequel l'application du cylindre d'éponge fut suivie du plus heureux succès, je pourrais placer plusieurs observations où des résultats analogues ont été obtenus; mais je crois ce genre de preuve inutile pour un moyen qui figure depuis longtemps dans la science, et dont les bons effets ne sont mis en doute par personne.

Je le répète, qu'on ne me prête pas la pensée de donner à ce moyen une importance thérapeutique que je ne lui suppose pas. Palliatif momentané d'un déplacement utérin, l'éponge ne peut ni en éloigner la cause, ni s'y opposer d'une manière continue; elle est d'un grand secours pour faire cesser la stérilité, mais complétement insuffisante pour guérir une déviation. Le traitement médical définitif de celle-ci importe sans doute beaucoup au sujet de ce livre; mais il rentre tellement dans la pathologie commune que je renvoie le lecteur à l'histoire générale des maladies utérines.

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(1) Voyez la page 505.

B. — *Déplacements du corps seul de l'utérus. — Flexions.*

Quand le corps seul de l'utérus est dévié de son axe et que le col reste dans sa position normale, le déplacement est appelé flexion ; comme la version, il prend le nom d'antéflexion, de rétroflexion ou de latéroflexion, selon que le renversement de l'organe a lieu en avant, en arrière ou sur les côtés.

Le mécanisme par lequel la flexion devient une cause de stérilité est tout différent de celui que je viens de décrire à l'occasion de la version ; tandis que dans celle-ci la stérilité est produite par la rupture des rapports d'opposition entre l'organe mâle et l'organe femelle, dans la flexion où l'harmonie de ces rapports reste intacte, la stérilité est amenée par l'occlusion du canal utérin résultant du renversement de la matrice sur elle-même. Au point de sa courbure, l'utérus forme un angle rentrant dans lequel ses parois, mises en contact, interceptent le passage au sperme et l'empêchent ainsi d'aller faire sa jonction avec l'ovule.

Mais pour que cet empêchement soit complet, pour que cet obstacle soit absolu, il faut, on le comprend, que le déplacement de l'utérus atteigne certaines limites ; si le canal, en effet, n'est pas entièrement bouché et si les parois utérines ne sont pas étroitement collées l'une contre l'autre, le sperme, grâce aux contractions de l'organe gestateur, peut franchir le défilé et aller remplir son rôle, comme dans les circonstances ordinaires.

Les conditions de ce mécanisme rendent suffisamment compte de la place secondaire que, relativement aux versions, les flexions occupent dans l'étiologie de la stérilité. Si un déplacement du corps de l'utérus est chose assez commune pour que quelques anatomistes l'aient considéré comme un état normal jusqu'à la première gestation (1), une flexion capable d'intercepter complétement le canal utérin, et par suite d'entraîner la stérilité, est une chose assez rare et contre les observations de laquelle il importe de se mettre en garde.

Cependant on ne peut les révoquer en doute, et l'étiologie agénésique les doit faire entrer dans son cadre; mais, hâtons-nous de le dire, arrivée à ce point extrême, la flexion utérine détermine des accidents, soit du côté du rectum, soit du côté de la vessie, sans parler des douleurs dans les reins, dans les lombes, etc., qui, bien plus que le rétablissement de la faculté procréatrice, sollicitent l'attention du médecin.

En présence de ces accidents et de ces douleurs, et avec les données fournies par le toucher vaginal, et au besoin par le toucher rectal, le diagnostic ne saurait être difficile. Le corps de l'utérus fléchi sur lui-même vient faire tumeur au cul-de-sac du vagin, à travers lequel le doigt le moins exercé le reconnaît et le limite.

Là n'est pas l'embarras ; il est tout entier dans la thérapeutique.

Tout à l'heure, dans la version, le chirurgien avait la ressource d'agir sur le col et d'imprimer à tout l'organe un mouvement de bascule qui le ramenait dans sa position normale ; dans la flexion, cette ressource n'existe pas, et il faut atteindre une partie perdue dans l'excavation du bassin, et sur laquelle nous n'avons que des moyens indirects d'action.

Par la méthode de Simpson et Valleix, surtout avec la sonde du premier, on agit bien directement sur le corps de l'utérus; mais cette ressource, comme je l'ai déjà dit précédemment, est tout à la fois dangereuse et aléatoire.

Les pessaires utérins, si ce n'est peut-être celui de M. Hervez de Chégoin, qui, même dans les cas de version, veut qu'on agisse sur le corps et non sur le col de la matrice, les pessaires utérins, disons-nous, n'ont qu'une influence négative. Les pessaires vaginaux répondraient mieux à l'indication qu'il s'agit de remplir, s'ils pouvaient être fixés d'une manière plus solide qu'ils ne le sont ordinairement, et s'ils n'étaient pas un obstacle insurmontable pour le coït.

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(1) Boullard, *Quelques mots sur l'utérus*, thèse inaugurale. Paris, 1853.

Les cylindres de linge ou d'éponge, introduits dans le rectum, outre qu'ils n'obvient qu'à une variété de flexions, mettent obstacle à l'exercice d'une des fonctions les plus importantes de l'économie, et sont, par cela même, relégués dans le domaine de la théorie, à côté des espérances que l'on avait fondées sur la plénitude de la vessie et sur celle de l'intestin.

En dehors de la position et des ressources fournies par un bandage contentif, j'estime que tout moyen mécanique doit le plus souvent échouer dans le redressement du corps de l'utérus. Il importe donc de recourir au traitement médical et de combattre la cause elle-même de la déviation, sans perdre son temps dans des tentatives vaines et qui peuvent bien ne pas être toujours exemptes de dangers.

CHAPITRE III

TROUBLES DE L'ACTE D'IMPRÉGNATION.

Je ne reviendrai pas ici sur la discussion que soulèvent deux points de l'histoire de la conception, que j'ai traitée dans une autre partie de cet ouvrage (1), et qui sont relatifs : 1° au lieu où se fait la rencontre du produit mâle et du produit femelle; 2° au mode d'union de ces deux produits.

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(1) Voyez les pages 46 et suiv.

Sous le premier rapport, je me suis rangé à l'opinion qui place dans l'utérus même, ou dans la partie de la trompe la plus voisine de cet organe, l'acte de l'imprégnation ; et, en ce qui regarde le second point, c'est-à-dire la manière par laquelle cette imprégnation s'opère, j'ai franchement avoué notre ignorance, et je me suis abstenu de toute décision en présence d'observations contradictoires et de théories que rien ne légitime.

En conséquence, après avoir suivi séparément le produit mâle et le produit femelle, depuis le lieu de leur sécrétion respective jusque dans celui où leur réunion doit se faire, il ne me reste plus qu'à chercher les obstacles qui peuvent s'opposer à cette réunion même et qui, nécessairement, dérivent ou de l'organe qui sert de scène à l'acte qui va s'accomplir, ou des conditions qui président au *fusionnement* du spermatozoïde et de l'ovule.

Mais les conditions de ce fusionnement nous étant inconnues, comme je l'ai dit, il serait oiseux et absurde de rechercher les caractères de ses modifications. Notre ignorance crée ici une lacune qui n'est peut-être pas aussi regrettable qu'elle semble le paraître, car il est à présumer que toutes les causes d'altération du produit mâle et du produit femelle ont agi sur eux pendant le long trajet qu'ils parcourent à travers des écueils sans nombre (1), et qu'au moment suprême de leur union, l'obstacle à leur fusionnement ne réside plus en eux, et ne provient que de l'organe chargé de protéger et de favoriser ce fusionnement.

Cet organe est, comme je l'ai dit plus haut, l'utérus.

C'est donc à lui que nous allons maintenant demander compte des nouvelles causes de stérilité qui nous restent à examiner.

Mais, avant d'aller plus loin, enlevons à l'utérus la large part qu'on lui a faite jusqu'à présent dans l'histoire de l'infécondité ; la place qui lui revient est très-minime : au point de vue de la réception du sperme, le col de la matrice est, comme nous l'avons vu, l'acteur principal, l'utérus proprement dit ne remplit qu'un rôle secondaire ; au moment suprême où le spermatozoïde va s'unir à l'ovule, l'utérus est également passif et n'est pas autre chose, si je puis me servir de ces expressions, que le terrain sur lequel a lieu la rencontre de l'élément mâle et de l'élément femelle. Son rôle véritable, sa grande et importante mission commence dès que s'est opérée cette rencontre ; l'utérus est alors réellement actif ; il devient l'agent, que dis-je? la source à laquelle le nouvel être va puiser sa vitalité, et l'on comprend que la moindre de ses altérations suffise pour porter atteinte à cette fonction ; aussi la pathologie utérine, après avoir déchu dans l'histoire proprement dite de la stérilité, reprend-elle tous ses droits et en acquiert peut-être de nouveaux, comme je le dirai dans l'histoire de l'avortement précoce. On ne s'étonnera donc pas de me voir passer rapidement ici sur cette pathologie; car, je le répète, si les affections qui la composent exercent une action très-étendue et légitime sur le développement de l'œuf fécondé, elles ont, hormis quelques cas que je vais spécifier, une influence à peu près nulle sur la faculté procréatrice de la femme et sur l'acte de la fécondation.

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(1) Voyez p. 631, *État pathologique du spermatozoïde*, et p. 658, *État pathologique de l'ovule.*

§ I. — Anomalies de l'utérus

L'embryologie, en nous dévoilant le mécanisme de la formation des organes, a éclairé d'un jour tout nouveau l'histoire des vices de conformation et celle des monstruosités.

Les anomalies des organes génitaux, en particulier, ne sont réellement compréhensibles qu'avec les données que nous fournit cette science, et je me vois forcé, même pour la brièveté de ce chapitre, de rappeler en quelques mots le mode de formation de l'utérus.

Dans les premières semaines de la vie intra-utérine, on rencontre des deux côtés de la colonne vertébrale un corps allongé, composé de tubes en cæcum dont l'extrémité externe débouche dans un tube unique, appelé canal excréteur.

Ces deux corps allongés se nomment *corps de Wolff.*

A la partie supérieure et interne de chacun de ces deux corps allongés, se trouve un renflement qui deviendra testicule ou ovaire, selon le sexe du fœtus.

Sur le côté externe de chaque corps de Wolff, longeant le canal excréteur, se trouve un cordon d'abord plein, mais creusé plus tard, auquel Muller qui le découvrit a donné son nom.

Ce cordon, après avoir longé pendant quelque temps le canal excréteur de Wolff, le contourne et se rapproche de son congénère, avant d'aller se jeter dans le cloaque.

Ces notions, quelque succinctes qu'elles soient, suffisent, je l'espère, pour faire comprendre les anomalies qui peuvent atteindre l'utérus.

Selon que le renflement que j'ai dit exister à la partie supérieure et interne du corps de Wolff, deviendra testicule ou ovaire, il se produira les phénomènes suivants :

Si le fœtus est mâle, c'est-à-dire si le renflement devient testicule, le canal excréteur du corps de Wolff sera le canal déférent et celui de l'épididyme, tandis que les tubes moyens formeront les vaisseaux afférents du testicule et de l'épididyme. Les canaux de Muller s'atrophieront.

Si au contraire le fœtus est femelle, le corps de Wolff et son canal excréteur disparaissent, les tubes moyens forment, comme chez le fœtus mâle, l'organe de Rosenmuller; mais les canaux de Muller se développent, se rapprochent et finissent par se mettre en contact et par se fusionner sur ce point.

Ce point de jonction ou de fusion des deux conduits de Muller constituera l'utérus.

La partie du canal qui est audessus de ce point sera la trompe de Fallope;

Et la partie située au-dessous sera la partie utérine ou supérieure du vagin.

Le développement et la fusion des deux canaux de Muller sont les deux circonstances capitales dans la formation de l'utérus; par conséquent ses anomalies peuvent se partager en deux grandes classes :

1° Celles qui se rapportent à un arrêt de développement de l'un ou des deux conduits de Muller;

2° Celles qui se rapportent à une fusion incomplète ou anormale de ces deux mêmes conduits.

Enfin le canal de Muller peut se développer concurremment avec le conduit excréteur de Wolff; on a alors le spectacle de l'hermaphrodisme dont les variétés reposent sur le développement ou l'arrêt de développement d'un ou des deux canaux de Muller, et d'un ou des deux canaux excréteurs du corps de Wolff, sans parler des anomalies des organes externes dont la formation est indépendante de celle des organes internes.

Nous aurons ainsi une troisième classe d'anomalies qui se rapportera au développement simultané du canal de Muller et du canal excréteur du corps de Wolff, et dans laquelle viendront se ranger toutes les variétés de l'hermaphrodisme.

C'est dans cet ordre que je vais les examiner, non au point de vue tératologique ou anatomo-pathologique, mais en restant sur le terrain seul de la stérilité.

A. — *Arrêt de développement de l'un ou des deux conduits de Muller.*

A côté de l'arrêt de développement des deux canaux de Muller (*uterus deficiens*), et de l'arrêt de développement d'un seul de ces canaux (*uterus unicornis*), on a voulu mettre l'arrêt de développement de l'utérus bien conformé (*uterus fœtalis*) et l'arrêt de développement du col seul (*uterus acolis*).

Nous ne parlerons ici que des deux premières variétés, les deux autres ayant trouvé leur place dans les vices de conformation du col de l'utérus.

Absence de l'utérus (*uterus deficiens*). — L'absence réelle de l'utérus n'est pas unanimement admise ; mais que l'utérus manque absolument ou soit représenté par un simple cordon fibreux, il nous importe peu : la stérilité est fatale ; le plus souvent la copulation elle-même est compromise, lorsque l'arrêt de développement a frappé dans son entier le canal de Muller. Cependant les organes externes dont la formation est indépendante de celle des organes internes sont à l'état normal ; le vagin peut l'être quelquefois aussi, lorsque la portion inférieure des canaux de Muller n'a pas suivi l'arrêt de développement de la partie centrale.

Mais que le vagin existe ou fasse défaut, l'art n'a pas à intervenir ; la malheureuse victime de cette malformation est femme par les ovaires ; mais elle ne sera jamais mère et, le plus souvent, pas même épouse.

Utérus réduit à moitié (*uterus unicornis*). — Dans cette variété, un seul des conduits de Muller s'est développé de manière à former une matrice ; l'autre est plus ou moins complétement atrophié.

La fécondation et la gestation sont possibles. Granville a communiqué à Everard Home l'observation curieuse d'une femme qui, affectée de cette malformation, eut onze enfants, tantôt des garçons, tantôt des filles, et mourut à la suite d'un accouchement de deux jumeaux de sexe différent (1).

Comme tout le monde peut le remarquer avec M. Le Fort, ce cas prouve d'une manière irréfutable : 1° que la grossesse gémellaire peut être produite par deux ovules venus du même ovaire ; 2° qu'un seul ovaire peut produire des ovules mâle ou femelle.

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(1) *Mem. of the med. Society of London*, 24 septembre 1787.

B. — *Fusion incomplète ou anormale des conduits de Muller.*

Utérus double (*uterus didelphus*). — C'est la variété la plus complète ; elle est constituée par l'entier développement des deux canaux de Muller qui restent plus ou moins écartés l'un de l'autre. Cette monstruosité, dans laquelle chaque utérus a son ovaire, sa trompe, ses ligaments et son vagin, n'a été observée que sur des enfants mort-nés ou morts peu après la naissance.

Utérus double avec cloisonnement (*uterus bicornis*). — L'utérus est partagé extérieurement en deux moitiés ; on distingue deux variétés de ce genre de déformation :

1° Tantôt chacune de ces moitiés, qui se sont développées également, a le volume d'un utérus normal, *utérus bicorne double;* les deux moitiés sont intimement unies, de manière à constituer un tout ; les deux cols sont le plus souvent l'un à côté de l'autre ; quelquefois le vagin est également double, et alors il y a deux hymens chez les vierges ; mais le plus souvent le vagin est simple ; 2° tantôt le col et le vagin sont simples, le corps de l'utérus est seul divisé en deux moitiés plus ou moins distantes, *utérus bicorne unicolis.* La membrane qui sépare la cavité utérine en deux moitiés pénètre plus ou moins vers le col : elle peut arriver même à l'orifice et dans la cavité du col, mais ne pénètre pas jusqu'à l'orifice externe.

Ni la copulation, ni la fécondation ne sont compromises par un utérus double avec cloisonnement, soit que le vagin soit lui-même double ou simple.

Utérus biloculaire (*uterus bilocularis*). — Dans cette forme l'utérus paraît simple extérieurement ; mais sa cavité est divisée en deux moitiés par une paroi mitoyenne de longueur variable. On peut encore distinguer deux variétés :

1° Tantôt la cavité utérine est partagée complétement en deux moitiés par une paroi mitoyenne qui se prolonge dans toute l'étendue du vagin, *utérus biloculaire complet;*

2° Tantôt cette cloison ne pénètre pas dans le col qui reste simple, et ne divise que l'intérieur du corps utérin, *utérus biloculaire unicolis.*

Ici encore, ni la copulation, ni la fécondation ne sont compromises; ce n'est souvent qu'à l'autopsie qu'on constate un pareil vice de conformation.

Je n'ai donc pas à m'y arrêter davantage.

C. — *Développement simultané du corps de Wolff et du canal de Muller. Hermaphrodisme.*

La formation des organes internes de la génération étant indépendante, chez l'homme comme chez la femme, de celle des organes externes, les anomalies des premiers peuvent ne pas entraîner fatalement celles des seconds, et réciproquement les vices de conformation des organes externes n'impliquent pas nécessairement des vices de conformation des testicules, des canaux déférents, des vésicules séminales d'un côté, et d'autre part de l'utérus, des trompes et des ovaires.

Les vices de conformation qui atteignent l'ensemble de l'appareil copulateur dans l'un et l'autre sexe, c'est-à-dire les organes externes de la génération, et que j'ai pris soin d'étudier successivement, peuvent induire en erreur sur le sexe de l'individu qui les porte, mais ne constituent pas des cas d'hermaphrodisme.

Il n'y a hermaphrodisme qu'avec certaines anomalies des organes internes, des organes essentiels de la génération.

Je n'ai à m'occuper ici que de ces dernières, et encore de celles qui sont relatives à l'utérus, puisque j'ai déjà examiné d'une part les anomalies de l'appareil copulateur chez l'homme (1) et chez la femme (2), et d'autre part celles des organes internes de l'homme (3).

Cependant je ne ferai qu'indiquer les lignes principales de ce sujet intéressant, parce que tous les hermaphrodites, quelle que soit la variété à laquelle ils appartiennent, sont condamnés à une infécondité contre laquelle l'art est impuissant et dont la cause n'est presque toujours révélée que par l'autopsie.

Hermaphrodisme vrai. — Il consiste dans l'existence simultanée d'une prostate et d'un utérus, d'un testicule d'un côté et d'un ovaire de l'autre. Tous les tératologistes n'admettent pas cette forme, malgré quelques faits que possède la science, et malgré la facile explication que l'on peut donner du mécanisme de sa formation.

Hermaphrodisme latéral. — L'hermaphrodisme vrai n'est en réalité qu'un hermaphrodisme latéral plus complet; dans l'un et dans l'autre on trouve l'ovaire d'un côté et le testicule de l'autre; mais dans le premier on rencontre simultanément une prostate et un utérus, tandis que dans le second la prostate manque communément.

Dans tous ces cas, le testicule existant peut se montrer en dehors de l'abdomen, soit dans le scrotum de son côté, si les organes externes sont mâles, soit dans la grande lèvre du même côté, si les organes externes sont ceux d'une femme; mais le plus généralement le testicule reste dans la cavité abdominale ou est retenu à l'anneau.

Hermaphrodisme vertical. — Cette forme est constituée par le développement de l'organe mâle et de l'organe femelle dans un même côté, tandis que dans l'autre l'organisation mâle ou femelle a suivi son développement normal : « Nous n'avons besoin maintenant, dit M. Le Fort, que d'une très-courte explication pour faire comprendre le mécanisme de cette anomalie : le conduit de Muller et le canal excréteur du corps de Wolff du même côté se sont tous deux développés. Le tube de Muller a formé la trompe et l'utérus ; le conduit excréteur a donné l'épididyme et des vésicules séminales. Si les tubes en cæcum restent attachés au conduit de Muller, l'organe générateur devient un ovaire ; s'ils restent attachés au conduit excréteur, l'organe générateur devient un testicule ; mais si nous trouvons du même côté un testicule, une trompe de Fallope et même un utérus, nous ne saurions y trouver en même temps un ovaire bien développé (1). »

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(1) Voyez la page 109.
(2) Voyez la page 413.
(3) Voyez la page 542.

On comprend toutes les variétés que peut présenter l'hermaphrodisme vertical : il peut se montrer tantôt des deux côtés avec des organes générateurs similaires ou différents, tantôt d'un seul côté avec un organe générateur similaire ou différent de l'organe générateur du côté normal, etc.

Hermaphrodisme transverse. — Dans cette forme d'hermaphrodisme il n'y a vicieuse conformation ni des organes externes, ni des organes internes de la génération, mais opposition entre l'organisation intérieure et l'organisation extérieure ; on a ainsi des individus avec des formes masculines et des attributs féminins, ou avec des formes féminines et des attributs masculins. Le sexe réel se cache sous un masque trompeur et emprunte toutes les apparences de l'autre sexe.

Quelquefois, quand la déformation de l'appareil copulateur n'est pas très-prononcée et que le sexe véritable appartient à la femme, on peut utilement intervenir en creusant un vagin et en allant au-devant de l'utérus, ainsi que je l'ai dit en parlant des anomalies multiples de l'appareil copulateur de la femme.

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(1) Le Fort, *Des vices de conformation de l'utérus et du vagin*, thèse de concours, 1863, p. 193.

En dehors de ces circonstances rares, je le répète, l'hermaphrodisme est une cause de stérilité qui ne doit pas m'occuper davantage, parce que le chirurgien n'a ni occasion ni prétexte à intervenir.

§ II. — Lésions organiques de l'utérus.

Lésions de continuité. — Il ne s'agit point ici des plaies et des contusions de la matrice, qui, en dehors des cicatrices vicieuses qu'elles peuvent laisser après elles, ne sauraient empêcher l'ovule d'arriver et d'être retenu dans l'organe gestateur ; il ne peut non plus être question de la rupture de l'utérus, car cet accident entraîne presque toujours la mort de la malade; je ne veux parler, en cette place, que des perforations qui se produisent, quand elles ne sont pas congénitales, à la suite de quelque affection chronique, comme le carcinome, par exemple, et qui, se prolongeant jusqu'au rectum ou la vessie, établissent une communication fistuleuse entre ces organes et la matrice.

Sans doute, une semblable perforation n'est pas fatalement une cause de stérilité : l'ovule, parvenu dans l'utérus, peut s'y loger loin de la fistule et recevoir encore l'imprégnation du sperme; mais il peut arriver aussi, surtout si la face interne de l'utérus est le siége d'une sécrétion abondante, que l'ovule soit entraîné vers la fistule et porté de là dans le rectum ou la vessie, soit par son mouvement propre, soit par la contraction des fibres musculaires de la matrice, soit par le courant des mucosités utérines.

C'est encore, comme on le voit, une chance de stérilité.

Cette lésion est bien rarement justiciable des ressources de notre art, surtout quand la communication se fait avec la vessie ou la partie la plus supérieure du rectum. Dans la plupart de ces cas, fort rares, il faut en convenir, on doit attendre la guérison de la nature et la fécondation du hasard.

Métrite. — La métrite, qu'elle soit aiguë ou chronique, ne saurait être par elle-même une cause de stérilité. Nous lui verrons tout à l'heure jouer un rôle important, alors que j'examinerai les conditions qui président aux avortements précoces. Mais, en cette place, elle n'a quelque valeur que par les accidents dont elle peut être suivie.

Chomel (1) a vu, à la suite de la métrite chronique, le col oblitéré par une adhérence immédiate; ne peut-on pas admettre que cette adhérence se fixe sur un point même de la cavité utérine, et que des brides transversales forment une espèce de cloison infranchissable à l'animalcule spermatique et à l'ovule ?

De plus la métrite chronique, surtout la métrite catarrhale, donne lieu à des sécrétions abondantes et viciées qui peuvent ou empêcher le passage du sperme ou porter atteinte à la vitalité du spermatozoïde, c'est-à-dire amener la stérilité ou mécaniquement ou chimiquement.

La sécrétion leucorrhéique est visqueuse, adhérente, oblitère souvent le col utérin et forme à son orifice vaginal un bouchon qu'il n'est pas toujours facile de détacher et qui empêche d'une manière absolue la pénétration du sperme.

Dans d'autres circonstances le liquide utérin présente un *excès* d'alcalinité dont l'influence sur le zoosperme est aussi funeste que l'acidité des mucosités vaginales.

Sans doute ces causes de stérilité sont essentiellement passagères : outre que la métrite catarrhale peut être combattue avec succès, on a la ressource, au point de vue de l'aptitude temporaire à la fécondation, de désobstruer le col et de le nettoyer au moyen d'une injection intra-utérine légèrement acide.

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(1) *Dictionnaire de médecine*, t. XXX, art. UTÉRUS (INFLAMMATION).

Enfin, comme je le dirai tout à l'heure, la métrite chronique prédispose surtout à l'avortement; elle reviendra nécessairement sous ma plume quand je parlerai des troubles de la gestation. Il en est de même de cette forme de métrite qui, à chaque époque menstruelle, s'accompagne d'expulsion de membranes avec des phénomènes douloureux qui lui ont fait donner le nom de *dysménorrhée membraneuse.*

Cependant la stérilité, c'est-à-dire l'absence complète de toute présomption de grossesse, est un fait remarquable dans presque tous les faits de dysménorrhée membraneuse. Il est vrai que l'affection atteint presque toujours les femmes malingres, débilitées, scrofuleuses, en un mot, chez lesquelles existe un alanguissement de vitalité qui peut réagir sur l'ovule.

Arrêt d'involution. — Pendant la grossesse, l'utérus, eu égard à l'augmentation considérable de son volume, subit une espèce d'hypertrophie physiologique, en raison de laquelle le retour de l'organe à son état normal, après l'accouchement, peut, à son tour, être considéré comme une sorte d'atrophie physiologique.

En Allemagne et surtout en Angleterre on a mieux étudié qu'en France le mécanisme de ces deux phénomènes.

Ce travail du retour de la matrice vers son volume normal, après l'expulsion du produit de la conception, est appelé en Angleterre *involution.*

L'involution peut être entravée dans sa marche ou s'opérer avec excès. Simpson désigne le premier cas sous le nom de *subinvolution*, et le second sous celui de *superinvolution.*

La subinvolution maintient le volume de l'utérus dans l'état où il était pendant la grossesse, et ce volume, dans les conditions de vacuité où se trouve l'organe, constitue une véritable hypertrophie qui, malgré son origine toute physiologique, devient pathologique par sa continuité.

La superinvolution, en dépassant les limites de la diminution normale du volume, amène l'atrophie de l'organe, qui bien souvent est perdu pour la fécondation, surtout quand le mal date de loin.

Cependant le médecin doit tout tenter dans le but de donner à l'utérus une vie nouvelle ; à cet effet, il aura recours tout à la fois aux moyens généraux et aux moyens locaux de reconstitution.

Comme moyens généraux il insistera sur le régime alimentaire, sur les toniques, sur l'hydrothérapie et sur les bains de mer ; du côté de l'utérus, il emploiera l'électricité, des tiges dilatatrices, fera sur le col de l'organe et sur la paroi abdominale des frictions excitantes, en un mot il recourra à tous les moyens locaux d'excitation compatibles avec l'état de la matrice.

Les chances de succès sont proportionnelles au temps qui s'est écoulé depuis l'accouchement.

Quant à la subinvolution, c'est-à-dire à l'hypertrophie de l'utérus par arrêt du travail rétrograde, l'art est moins désarmé que dans l'atrophie, s'il faut en croire Simpson, qui en a observé trois cas.

Le diagnostic de cette étrange affection est plus facile à établir que la détermination des causes qui la peuvent produire. Sous ce rapport Simpson, Montgomery et Fl. Churchill ne nous apprennent absolument rien ; nous en sommes réduits aux circonstances occasionnelles qui seraient la métrite, la fréquence des avortements et l'absence d'un repos suffisant après les couches.

Les femmes atteintes d'arrêt d'involution ont la sensation d'un poids dans le bassin, une grande lassitude, de la constipation, de fréquentes envies d'uriner, phénomènes dus à la pression que l'utérus hypertrophié exerce sur le rectum et sur le bas-fond de la vessie. De plus les règles reviennent fréquemment ou d'une manière anormalement abondante.

La palpation abdominale, combinée avec le toucher vaginal, fait facilement apprécier l'augmentation du poids et du volume de l'organe, pendant que le cathétérisme permet de constater la vacuité de la cavité utérine.

Comme on le voit, le diagnostic ne saurait offrir beaucoup de difficultés, malgré la complication que peuvent apporter les changements de position de l'organe, si faciles avec un développement aussi considérable de poids et de volume.

Au point de vue de la stérilité, le pronostic est toujours positif, car, s'il n'en était point ainsi, Simpson eût conseillé une grossesse à la place de l'hypertrophie artificielle dont nous allons parler tout à l'heure.

Heureusement cette stérilité n'est que temporaire et disparaît avec l'affection qui lui a donné naissance.

Les moyens qui peuvent ramener l'utérus à son volume normal sont les antiphlogistiques sous toutes les formes, quand le médecin est appelé d'assez bonne heure à combattre l'état aigu. Cette circonstance est rare, car ce n'est que plusieurs mois après l'accouchement que la malade s'inquiète de la persistance de phénomènes qu'elle mettait jusque-là sur le compte des suites de couches.

C'est donc presque toujours en dehors de l'acuité et d'un état inflammatoire que l'art intervient; Simpson préconise surtout les contre-irritants appliqués sur l'abdomen, tels que l'huile de croton, la pommade stibiée, la teinture d'iode, et surtout les vésicatoires, petits et fréquemment répétés.

En même temps que ces moyens destinés à réveiller la faculté d'absorption, on emploie les résolutifs à l'intérieur et localement sur le col de l'utérus. Les iodures, les bromures et les mercuriaux sont toujours les fondants par excellence, auxquels cependant il faut associer les martiaux dans les cas de chlorose, ou le médicament approprié à la présence d'une diathèse.

Mais nous avons hâte d'arriver au moyen ingénieux imaginé par Simpson pour combattre les cas de subinvolution rebelles et tenaces.

Pensant avec raison qu'un nouveau travail hypertrophique s'opérant sur l'utérus déjà hypertrophié pourrait ramener la faculté d'absorption, après la disparition de la cause de cette hypertrophie temporaire et avec les ressources que la médecine pourrait mettre au service de la nature, le professeur d'Édimbourg imagina d'introduire un corps étranger dans l'intérieur de l'utérus, dont la tendance, dans ce cas, est de s'irriter et d'augmenter de volume, comme dans les cas de môles, de tumeurs, sans parler de la grossesse. Les corps à introduire peuvent être des éponges préparées, des pessaires intra-utérins, n'importe, pourvu que se produise l'évolution rétrograde, au premier symptôme de laquelle on agit activement avec les moyens indiqués plus haut, auxquels on peut, au besoin, associer l'usage du seigle ergoté.

Cette méthode ingénieuse ne réussit pas toujours du premier coup; il faut y revenir à plusieurs reprises pour triompher des cas les plus rebelles.

Dégénérescences. — Il suffit d'écrire le titre de ce paragraphe pour saisir immédiatement l'influence fâcheuse que doivent exercer sur la fécondation les maladies diverses qu'il exprime. Quelle qu'elle soit, la dégénérescence de la matrice, en faisant perdre aux tissus les conditions anatomiques qui les constituent, altère fatalement les fonctions vitales de l'organe. Comment concevoir, par exemple, la continuation de la contractilité dans un organe musculaire dont les fibres sont tantôt métamorphosées en une espèce de bouillie, comme dans l'encéphaloïde; tantôt rendues inextensibles, comme dans le fibro-plastique; tantôt durcies, comme dans l'ossification, etc.

Je n'ai point à faire ici l'histoire de cette partie de la pathologie utérine; l'étude du cancer, de la tuberculisation, de l'ossification et des autres espèces de dégénérescences de la matrice, ne rentre pas dans les limites restreintes de l'ouvrage que j'écris; je dois me contenter d'en marquer l'importance au point de vue de l'objet qui m'occupe, et d'en abandonner la description aux traités généraux des maladies des organes reproducteurs chez la femme.

D'ailleurs, si nous en exceptons le cancer et ses diverses formes, les tumeurs fibreuses interstitielles et la tuberculisation dont la réalité n'est pas admise par tous les auteurs, nous sommes forcé de reconnaître que, généralement, les dégénérescences utérines arrivent à un âge où depuis longtemps déjà la faculté procréatrice s'est éteinte, de telle sorte qu'en entreprenant l'examen de ces affections, nous ressemblerions fort au héros de Cervantes, qui épuisait ses forces et son courage contre des ennemis imaginaires. — Quant au cancer, son étude m'entraînerait dans de telles discussions étiologiques et symptomatiques, que je paraîtrais, à coup sûr, faire bien plutôt un travail de pathologie générale qu'une œuvre limitée et restreinte au seul cas de stérilité.

Je le répète donc, il me paraît suffisant d'énoncer le titre de ce paragraphe, pour que chacun comprenne le rôle néfaste que jouent, dans la fécondation de la femme, les dégénérescences diverses qui rentrent dans son cadre.

Affections de voisinage. — M. Baker Brown prétend que les maladies des organes voisins de l'utérus ont une action sympathique sur la matrice, et peuvent y déterminer une stérilité par action réflexe (1); les tumeurs vasculaires du méat urinaire et les maladies du rectum (hémorrhoïdes fluentes, fistule, fissure, prolapsus anal, ascarides, etc.) sont dans ce cas.

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(1) Baker Brown, *Surgical diseases of women*. London, 1861, p. 255.

Le professeur Courty, de son côté, assure avoir vu une grossesse se produire après la guérison d'une fissure à l'anus (1).

Je suis loin de contester la possibilité de cette action réflexe; mais les faits à l'appui sont et trop peu nombreux et trop peu probants, pour me faire admettre une forme de stérilité qu'il ne m'a pas été donné d'observer depuis trente années que je m'occupe de la matière.

§ III. — Lésions vitales de l'utérus.

Dans le chapitre précédent, je me suis longuement étendu sur les lésions vitales du col de l'utérus, parce que ces lésions, comme on a pu s'en convaincre, exercent bien réellement une influence fâcheuse sur l'aptitude procréatrice de la femme; il n'en est plus de même quand elles siégent sur le corps même de l'organe; la faculté génératrice n'en est pas affectée, et ces lésions, d'ailleurs, rarement indépendantes des lésions analogues du col, n'ont une réelle importance que dans la production de l'avortement précoce, de telle sorte que les considérations que je pourrais présenter sur elles se trouvent tout à la fois dans le chapitre précédent et dans celui qui suit, auxquels je dois nécessairement renvoyer le lecteur.

§ IV. — Corps étrangers de l'utérus.

Il en est de ce paragraphe comme de celui qui précède : pour l'intelligence de la question relative à la stérilité, il suffit d'en écrire le titre; mais pour les développements que le sujet comporte, il faudrait en faire un des chapitres les plus étendus de la pathologie utérine; on conçoit en effet que la cavité de la matrice n'est pas assez grande pour que l'ovule, quelque petit qu'il soit, trouve à s'y loger, quand des calculs, une tumeur ou un polype la remplissent. En admettant même que la vésicule germinale arrive jusque dans l'utérus, sa jonction avec le sperme est rendue impossible par la présence du corps étranger, qui fait alors l'office d'un véritable écran. Dans ce cas, l'ovule est résorbé soit dans la trompe, soit le plus souvent dans l'utérus lui-même.

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(1) Courty, *Traité pratique des maladies de l'utérus*. 2ᵉ édit. Paris, 1870, p. 1171.

Cependant, si l'obturateur n'occupait pas en totalité la cavité utérine, la fécondation pourrait encore se produire, ainsi qu'on en a des exemples, et alors le corps étranger ou la tumeur anormale sont quelquefois expulsés avec le produit de la conception. « Quand la grossesse complique les polypes, dit Lisfranc, ces productions organiques accidentelles, qui siégent à des hauteurs différentes dans la matrice, sont tantôt expulsées par le fœtus au moment où il se dégage lui-même de la capacité de l'utérus, tantôt elles restent dans cet organe après l'accouchement. Le docteur Rhodamel m'a montré une tumeur polypeuse du volume d'un gros œuf de poule; elle était située dans le col de la matrice; elle proéminait légèrement dans le vagin ; elle fut chassée des organes génitaux par le produit de la conception à mesure qu'il en sortit lui-même. J. Hatin pratique un accouchement qui n'offre rien d'extraordinaire; le délivre sort spontanément, tout se passe bien d'abord; mais, vers le quinzième jour, une perte rouge se manifeste; nous sommes appelé; nous touchons la malade et nous partageons l'opinion de notre confrère, qui avait constaté la présence d'un polype; cette tumeur formait au-dessous du col utérin une très-légère saillie; elle pénétrait dans l'utérus à une hauteur qu'il était impossible de reconnaître; la femme avait perdu une très-grande quantité de sang, elle était presque anémique. M. Bouillaud la vit avec nous. Je pratiquai une ligature dans le fond de la matrice; l'écoulement du sang fut immédiatement arrêté; il ne survint aucun accident, la malade guérit parfaitement (1). »

Il n'a été question jusqu'ici que des corps étrangers solides dont le maintien dans la cavité utérine n'implique pas l'occlusion de celle-ci; mais si le corps étranger était un liquide ou un gaz, comme dans les cas d'hydrométrie et de tympanite, la fermeture, quelle qu'en soit la cause, de l'orifice utéro-vaginal serait un motif de stérilité de plus à ajouter à ceux que détermine déjà la présence du corps étranger.

Les obstacles qui, en fermant l'ouverture inférieure de la matrice, s'opposent à l'écoulement des fluides contenus dans l'intérieur de l'organe gestateur, m'ont assez occupé précédemment pour qu'ici je ne m'y étende pas davantage.

CHAPITRE IV

TROUBLES DE LA FONCTION DE GESTATION.

Les considérations que j'ai placées en tête de la partie de cet ouvrage relative à la stérilité me dispensent de certains développements, nécessaires en la place que je désigne, mais qui peut-être ici eussent été un hors-d'œuvre; ce chapitre, en effet, est un simple appendice de mon travail, et ne saurait rentrer dans les limites que je m'étais imposées, car, je le répète, le cadre de la stérilité ne va pas au delà de l'imprégnation de l'ovule; cette imprégnation obtenue, on se trouve dans le domaine de la grossesse, et partant dans celui des ouvrages d'obstétrique.

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(1) Lisfranc, *Clinique chirurgicale de l'hôpital de la Pitié*, t. III, p. 156.

Pour toutes ces raisons, je serai très-bref dans ce qui me reste à dire.

Les causes de la chute de l'œuf avant l'époque normale de la parturition se trouvent tantôt dans l'ovule lui-même, et tantôt, c'est le cas le plus commun, dans l'organe gestateur.

1° *Chute de l'œuf par cause fœtale.* — Pour bien comprendre les conditions de l'avortement précoce dont la cause est dans l'ovule, il faut se rapporter au chapitre où j'expose les états pathologiques que peut présenter la vésicule de de Graaf fécondée.

J'ai reconnu que ces états pathologiques étaient tantôt un manque de vitalité, et tantôt un état inflammatoire des enveloppes avec hémorrhagie interstitielle.

L'ovule puise la vitalité nécessaire à son développement, partie dans le produit mâle, et partie en lui-même.

C'est donc à l'une de ces deux sources qu'il faut faire remonter la débilité de l'ovule, et par suite le traitement doit s'adresser à celle des deux qui est reconnue malade.

Je n'ai pas à revenir ici sur ce que j'ai dit de la débilité des spermatozoïdes et de celle des ovules ; je renvoie aux chapitres qui leur sont consacrés.

La chute précoce de l'ovule est le résultat de cette absence de vitalité, parce que le travail de nutrition, privé de ses éléments, s'épuise bientôt et s'anéantit tout à fait.

Quand, au contraire, les enveloppes de l'embryon sont atteintes d'inflammation suivie d'hémorrhagie interstitielle, le travail d'accolement de ces enveloppes avec la membrane caduque est altéré ; par suite l'ovule, entraîné par son propre poids et par les mucosités utérines, rompt les faibles attaches qui le retiennent à l'utérus, dont les contractions tendent bientôt à l'expulser.

Dans ce cas, la première condition de tout traitement est le repos absolu dans la position horizontale, en attendant que les antiphlogistiques généraux ou locaux, les émollients, les sédatifs, etc., aient fait disparaître l'inflammation de l'ovule et résorber le sang épanché.

Quand il est dû à un état inflammatoire de l'ovule, l'avortement précoce s'accompagne ordinairement d'un sentiment douloureux du côté de l'utérus, mais que la pression n'augmente pas, de douleurs vives au moment de l'expulsion, et d'une hémorrhagie assez abondante, triple phénomène infiniment moins prononcé dans l'avortement précoce, qui reconnaît pour cause l'absence de vitalité de l'ovule.

De plus, l'avortement par cause inflammatoire se produit presque toujours à l'époque des règles, parce que le travail cataménial n'est pas sans exercer, on le comprend, une influence fâcheuse sur cet état inflammatoire. Les autres avortements subissent moins l'empire de la congestion menstruelle, et se font indistinctement à toutes les époques du mois.

Enfin, contrairement aux avortements par cause de débilité et surtout à ceux dont le point de départ est à l'utérus, l'avortement par cause inflammatoire n'a pas une tendance à se reproduire d'une manière constante, à moins que l'ovule ne soit exposé, après chaque fécondation, aux mêmes lésions ou au même traumatisme.

Mais, je le répète avant de passer aux avortements par causes utérines, tout traitement, quelque énergique et méthodique qu'il soit, échoue à coup sûr en dehors de la position horizontale, imposée à la femme dès le premier soupçon de grossesse.

A présent j'ai hâte d'arriver aux avortements dont le point de départ est dans l'utérus, et dont la fréquence est incontestablement plus grande que celle des avortements qui sont produits par un état pathologique de l'ovule.

La part que prend l'utérus aux avortements précoces est très-grande, car je ne sais pas un seul état pathologique de l'organe gestateur qui ne soit capable d'amener le dépérissement et la chute anticipée de l'œuf. Cependant je ne veux pas dire que l'évolution fœtale ne se puisse faire et ne se fasse en effet qu'au milieu des conditions les plus normales d'une matrice saine; non, car il n'est pas rare de rencontrer des utérus profondément malades porter jusqu'à terme le produit de la conception, et ne le dépouiller d'aucun genre de vitalité. Mais de même que tout état morbide a besoin, pour se produire, non-seulement d'une cause déterminante, occasionnelle, mais encore de certaines conditions idiosyncrasiques dont l'essence nous est inconnue, et qui, au milieu de circonstances en apparence identiques, rendent l'action d'une cause morbide tantôt terrible et tantôt nulle; de même l'avortement précoce ne s'accomplit, sous l'influence d'un état pathologique quelconque de l'utérus, que tout autant qu'existe cette espèce de prédisposition fatale.

Néanmoins, en laissant de côté, comme on le fait communément, une inconnue qu'il est impossible de dégager dans les problèmes de notre art, on peut dire que tout état morbide de l'utérus, par cela même qu'il modifie les conditions organiques ou dynamiques de cet organe, est susceptible de troubler sa fonction gestatrice, et conséquemment de déterminer la chute de l'œuf.

1° *Lésions organiques.* — L'inflammation et même un simple état de phlogose sont les conditions les plus favorables à l'avortement précoce.

La métrite, dans toutes ses formes et dans tous ses périodes, peut être un obstacle au développement de l'œuf par les modifications que l'organe subit dans son volume, dans sa forme et surtout dans sa nutrition.

La métrite membraneuse est incontestablement celle dont l'influence est la plus considérable, en raison même des relations directes que la muqueuse entretient avec l'ovule; on comprend, en effet, que par la chute de son épithélium, que par le développement de ses vaisseaux capillaires, que par l'augmentation de ses glandes, que par l'exsudation fibro-plastique qui se fait à sa surface ; on comprend, dis-je, que la muqueuse utérine offre à l'ovule des villosités tout à la fois peu nombreuses et peu douées de vie, et que, par suite, la caduque sérotine n'offre qu'une faible résistance aux accidents qui sollicitent l'ovule, comme un flux rouge ou blanc venant de l'utérus, ou les mouvements du corps, tels que la danse, le saut, la marche et même la position debout.

Ce sont là, en effet, les circonstances qui déterminent la chute de l'œuf dont la cause première se trouve dans l'état phlegmasique de l'utérus.

Aussi lorsqu'une grossesse se produit avec une métrite soit aiguë soit chronique, le médecin, sans songer à la maladie principale qu'il est trop tard pour soigner, doit s'attacher à prévenir toute hémorrhagie, à modérer et même à arrêter les leucorrhées trop abondantes, et à condamner sa malade au repos le plus absolu.

La dysménorrhée membraneuse qui, quoi qu'on ait voulu dire, n'est qu'une forme de la métrite membraneuse qu'exaspère chaque époque menstruelle, est une cause inévitable d'avortement précoce. La muqueuse utérine, en s'exfoliant et en se détachant, entraîne avec elle l'ovule ; dans ces cas, la fausse couche a toujours lieu à l'époque cataméniale, et il ne se produit pas de retard, comme dans la plupart des autres avortements précoces.

Cependant ce caractère n'est pas exclusif à la dysménorrhée membraneuse, car dans toutes les formes de métrite, la déhiscence d'une nouvelle vésicule de de Graaf augmente l'état congestif de la muqueuse utérine et, par conséquent, l'état morbide dont cette muqueuse est le siége.

Et cela est si vrai que la simple phlogose utérine peut, par suite du travail congestif de l'époque menstruelle, devenir une cause d'avortement précoce.

C'est ainsi que s'explique la stérilité ou plutôt la non-gestation des femmes qui font excès de plaisirs vénériens (excès de coït ou de masturbation), et de celles chez qui le coït est incomplet, comme je l'ai déjà dit ailleurs (1).

Dans l'un et l'autre cas (excès vénériens et coït incomplet) il se passe dans toute la matrice, dont le col est alors le miroir fidèle, un phénomène analogue à celui qui se produit dans l'appareil génital de l'homme, lorsqu'à la suite d'une vive excitation érotique l'éjaculation du sperme n'est pas le dénouement d'une érection prolongée. Moins riche en nerfs que les testicules et le cordon spermatique, mais plus abondamment pourvue qu'eux de vaisseaux sanguins, la matrice, si elle ne trahit point, comme les organes de l'homme, une sensibilité douloureuse, n'en est pas moins le siége d'un travail pathologique dont le premier résultat est la phlogose de l'organe qui, par sa répétition et sa continuité, amène la chute de l'épithélium et par suite une lésion de tissus, sans parler des altérations de la vitalité dont je m'occuperai tout à l'heure.

Comme chez l'homme, il semble que le spasme cynique, chez la femme, n'est complet et physiologique qu'à la condition de la présence du sperme; on dirait que ce liquide est nécessaire pour calmer l'excitation à laquelle est en proie tout l'appareil génital, et que, semblable à une rosée bienfaisante, il apporte la fraîcheur et le calme à des ardeurs trop dévorantes.

Si l'action émolliente et sédative du sperme, si je puis ainsi dire, ne se fait pas sentir à l'utérus au moment de la plus grande exaltation amoureuse, si celle-ci est obligée de s'épuiser et de s'éteindre dans ses propres tressaillements, les congestions successives dont la matrice est le siége, à la suite de ces excitations répétées, amènent tantôt une phlogose et tantôt un état nerveux, l'un et l'autre incompatibles avec la fonction gestatrice.

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(1) Voyez la page 709.

Dans cet ordre sont le coït incomplet et la masturbation.

D'autres fois, par suite d'un excès dans l'excitation, ou par une répétition trop fréquente de l'acte, le sperme est incapable de calmer l'hyperhémie produite ; alors les excès de coït, même physiologique, amènent les mêmes résultats que la masturbation et le coït incomplet.

Comme je le disais plus haut, le col de l'utérus prend une large part à toutes ces excitations, et devient, par ainsi, le miroir des désordres produits : une coloration congestive, l'engorgement, des érosions, des ulcérations dénotent l'état phlegmasique, et sont quelquefois le point de départ d'accidents plus graves.

J'ai dû m'arrêter un instant sur ces causes de la phlogose utérine, parce qu'elles sont communes, qu'on les rencontre constamment dans la pratique, surtout le coït incomplet, et parce qu'on ne leur a pas jusqu'ici accordé l'attention qu'elles exigent.

Un traitement méthodique, quand la cause première a été écartée d'une manière absolue, réussit assez généralement à faire disparaître la phlogose. Si l'état général le permet, on se trouve bien, dès le début, de l'application de quelques sangsues au col, et ensuite d'applications émollientes directes, telles que cataplasmes vaginaux, sachets avec poudre impalpable de riz et de guimauve, tampons de ouate imbibée de glycérine, injections émollientes, bains généraux ou de siége, etc., etc.

Dans les cas de grossesse et alors qu'il ne faut que prévenir l'avortement, on doit se contenter du repos absolu de la malade, de bains de siége et, au besoin, de cataplasmes vaginaux.

Je dois borner à la métrite et à la phlogose utérine les considérations que j'avais à présenter sur les lésions organiques de l'utérus, capables de déterminer l'avortement précoce, parce que ces états en sont les points de départ les plus communs, et que, dans leur histoire, sont comprises les métrorrhagies, les menorrhées et les dysménorrhées, qui sont tout à la fois des causes prédisposantes et occasionnelles des fausses couches. D'ailleurs, pour me mettre à l'abri de tout reproche, je termine ce chapitre par la phrase que j'ai mise au début, c'est-à-dire que je ne sais pas un seul état pathologique de l'organe gestateur qui ne soit capable d'amener le dépérissement et la chute anticipée de l'ovule.

2° *Lésions vitales.* — Quand l'innervation de l'utérus est atteinte, le désordre qui en résulte prend tantôt le caractère névralgique et tantôt le caractère spasmodique.

L'hystéralgie est rarement par elle-même un motif d'avortement. Seulement, par son invasion brusque et violente, ou par sa continuité, elle peut éveiller des contractions utérines qui détachent l'œuf et l'expulsent.

J'ai vu un exemple de ce genre chez une jeune femme dont la menstruation avait un retard de trois semaines, et qui, sous l'influence d'un refroidissement subit, fut prise de douleurs névralgiques du côté de l'utérus, qui déterminèrent une fausse couche deux jours après l'accident. Cependant les douleurs avaient été promptement calmées par des applications chaudes, et surtout par une injection sous-cutanée de morphine. Pour moi, il s'est produit, dans ce cas, ou simultanément, ou consécutivement à l'hystéralgie, des contractions spasmodiques qui, seules, ont amené la fausse couche.

Ce sont, en effet, les spasmes de l'utérus qui, parmi les lésions vitales, déterminent seules la chute avant terme de l'œuf fécondé.

A côté de toutes les causes qui peuvent donner lieu à des spasmes utérins, tels que le refroidissement, le traumatisme, les maladies nerveuses de l'estomac, les affections diverses de l'utérus et de ses annexes, et surtout la dysménorrhée, soit nerveuse, soit même mécanique, il faut placer les circonstances dont j'ai déjà parlé à l'occasion de la phlogose utérine, c'est-à-dire les excès vénériens et le coït incomplet.

Quand les excès vénériens et le coït incomplet ne portent pas atteinte à la vitalité du col de la matrice, et ne sont pas une cause de stérilité, comme je l'ai indiqué plus haut (1), ils provoquent des états nerveux qui compromettent le fruit de la fécondation, et qui, en définitive, ont, au point de vue de la propagation, les mêmes résultats que l'inertie du col de l'utérus.

Heureusement la gravité n'est pas la même des deux côtés : tandis qu'il est souvent difficile de réveiller les contractions du col, on parvient assez facilement à calmer les spasmes utérins, soit avec des bains prolongés, soit avec des antispasmodiques, soit avec des stupéfiants. Les injections sous-cutanées de morphine, les lavements avec quelques gouttes de laudanum, les frictions sur le ventre avec du chloroforme, et des applications directes de tampons de ouate enduite de pommade belladonée, triomphent ordinairement des spasmes, et permettent l'évolution ultérieure de la gestation.

3° *Conditions morbides générales.* — Je ne fais qu'écrire le titre de ce paragraphe, car tout le monde comprend qu'un organisme profondément délabré, qu'une constitution malingre, maladive, scrofuleuse, en un mot, que tous les états généraux où la vie languit et fait presque défaut, sont des conditions essentiellement défavorables à la nutrition et au développement d'un nouvel être.

Cette débilitation de l'économie se communique tout à la fois à l'ovule et à l'utérus, et présente ainsi deux chances d'avortement.

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(1) Voyez la page 709 et suiv.

Heureusement la même médication, en relevant les forces générales, rend tout à la fois une vitalité suffisante à l'ovule et à l'utérus.

Cette médication, tonique et reconstituante, trouve des ressources inespérées dans l'hygiène, le régime alimentaire, le quinquina, le fer, l'hydrothérapie, quelques eaux minérales et les bains de mer, quand l'innervation n'est pas trop irritable.

APPENDICE

DE LA FÉCONDATION ARTIFICIELLE

§ I. — Historique.

Dans le courant du dernier siècle, Swammerdam et ensuite Roësel eurent l'idée de tenter la fécondation artificielle, pour apporter un argument nouveau et irréfutable à l'opinion qu'ils soutenaient relativement à la préexistence du germe des œufs dans la femelle.

Ces premiers expérimentateurs ne réussirent pas dans leurs tentatives; l'honneur en fut réservé, vers la fin du même siècle, à l'abbé Spallanzani qui, plus heureux que ses prédécesseurs, parvint à féconder artificiellement des amphibies, des ovipares et enfin des vivipares.

La fécondation artificielle d'une chienne fit grand bruit dans ce qu'on appelait alors la *République des lettres*, et C. Bonnet, l'auteur des *Considérations sur les corps organisés* et de la *Palingénésie philosophique*, ami de Spallanzani, se hâta de lui écrire : « Je ne sais même si ce que vous venez de découvrir n'aura pas quelque jour dans l'espèce humaine des applications auxquelles nous ne songeons point et dont les suites ne seront pas légères (1). »

Malgré ces encouragements, Spallanzani ne poursuivit pas ses tentatives sur la femme, et il nous faut arriver à ces dernières années pour trouver les premiers essais relatifs à la réalisation de la prédiction de Bonnet.

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(1) Spallanzani, *Expériences pour servir à l'histoire de la génération des animaux et des plantes*. Genève, 1786, p. 275.

. Nous ne parlons pas du cas de fécondation artificielle rapporté par Hunter dans les *Transactions de* 1799, parce que ce fait manque de toute authenticité et ne mérite que l'oubli.

Après un long temps de silence, M. Dehaut rappelle la question de la fécondation artificielle chez la femme, dans une petite brochure parue en 1865 (1).

Ce travail, qui ne s'appuie sur aucune expérience, paraît être une pure conception de l'esprit, quoique l'auteur décrive les instruments dont on doit faire usage.

L'année suivante, en 1866, parut la *Chirurgie utérine*, de M. Marion Sims, qui contenait, avec tous les détails rationnels, une observation de fécondation artificielle suivie de succès. Nous reviendrons tout à l'heure sur ce fait qui mérite attention.

Dès ce moment l'éveil donné par M. Marion Sims est suivi par d'autres expérimentateurs qui se hâtent de faire connaître leurs tentatives, pour la plupart heureuses.

La *Réforme médicale*, rédigée alors par notre regretté confrère et ami, le docteur Marchal (de Calvi), inséra, en 1867, dans ses colonnes un premier fait sans grande importance, communiqué par M. Lesueur, et un second appartenant au docteur Gigon (d'Angoulême), dont l'opération remontait à 1846.

L'année suivante, en 1868, M. le docteur Girault énuméra, dans l'*Abeille médicale*, dix cas de fécondation artificielle chez la femme, dont le premier datait de 1838.

Enfin, en 1871, M. Fabien Gigon, probablement le fils ou un parent du docteur Gigon (d'Angoulême) cité plus haut, fit sur la fécondation artificielle sa thèse inaugurale qu'il soutint devant la faculté de médecine de Paris.

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(1) Dehaut, *De la fécondation artificielle dans l'espèce humaine comme moyen de remédier à certaines causes de stérilité chez l'homme et chez la femme.*

Tels sont les documents dont la science est à cette heure en possession sur cette question intéressante et tout à fait neuve.

Il importe donc, à cause même de cette nouveauté, de ne pas admettre sans un sérieux examen tous les éléments d'un problème dont les conséquences, selon les expressions de Bonnet, ne sont pas légères.

Nous éloignerons l'observation de M. Lesueur au même titre que celle de Hunter, parce que, dans l'une et l'autre, l'opération a été faite par le mari, et par conséquent en dehors de tout contrôle scientifique.

De plus, dans ces deux cas, l'injection spermatique a été simplement vaginale et constitue une méthode trop aléatoire pour être prise en considération.

Il ne reste donc plus, en réservant le fait de M. Marion Sims qui nous occupera plus loin, que onze observations, dont une appartient au docteur Gigon, et les dix autres au docteur Girault.

Ces onze observations ne sont remarquables que par les lacunes qu'elles présentent.

Dans aucun cas on ne s'est d'abord assuré de la qualité du sperme employé. Aucun des deux expérimentateurs n'a noté ni la température du liquide séminal, ni la quantité de semence injectée, ni la longueur de la canule qui a pénétré dans le col utérin.

M. le docteur Gigon s'est servi d'une canule en caoutchouc dont une extrémité a été introduite dans le canal cervical et dont l'autre a été adaptée à une seringue en verre, dans laquelle le mari avait éjaculé son sperme, dans un *cabinet voisin*.

M. le docteur Girault a eu recours à une sonde d'homme, percée d'un trou au cul-de-sac, qu'il introduisait dans le col ; après avoir versé dans la sonde le sperme recueilli dans un vase, il soufflait doucement et à plusieurs reprises, à l'extrémité libre de la sonde, de façon à pousser le sperme dans la cavité utérine.

Quand on songe combien l'existence des spermatozoaires est compromise par le contact de l'air, de la lumière et le changement de température, on s'étonne que les expérimentateurs n'aient pas indiqué les précautions qu'ils avaient prises pour ménager la vitalité des animalcules.

Dans l'observation de M. Gigon le sperme est reçu dans une seringue dont la température n'est pas marquée, est transporté d'une pièce dans une autre, et n'arrive enfin à l'utérus qu'après avoir traversé une canule dont la température n'est également pas indiquée.

Dans les dix observations de M. Girault, la même absence de précautions se remarque, et il n'est même pas fait mention du temps écoulé entre l'éjaculation et l'injection utérine.

Dans tous ces cas, les instruments dont on s'est servi, canule ou sonde, étaient d'une grossièreté à compromettre le succès de l'opération.

M. Marion Sims, au contraire, a pris toutes les mesures capables de la faire réussir : il a exactement mesuré la longueur du tube qui doit pénétrer dans le col, et qu'il fixe à 1 pouce 9/60es (3 centimètres environ); il a exactement maintenu à l'instrument la même température qui, selon lui, doit être de 98° Fahrenheit, ni plus ni moins; enfin, et c'est ici qu'éclate toute la prévoyance de l'expérimentateur, le sperme a été pris dans le cul-de-sac du vagin, dans lequel il venait d'être éjaculé.

Après plusieurs essais, M. Marion Sims s'est convaincu qu'une demi-goutte de sperme suffisait pour la fécondation; il avait, à cet effet, adapté à la seringue dont il se servait une vis agissant sur le piston et avec laquelle il était facile de calculer la quantité de liquide à injecter ; une demi-révolution entière de la vis chassait une goutte ; une demi-révolution n'en chassait qu'une demi-goutte.

M. Sims n'a réussi qu'une fois ; il a cependant expérimenté près de deux ans sur une demi-douzaine de personnes différentes ; il a fait 55 injections dont il croit devoir en retrancher la moitié, « comme ayant été mal faites, ou faites avec des instruments mal construits et dans des circonstances mal choisies, ce qui donne en dernière analyse une conception sur 27 essais environ. »

Comme on le voit, la proportion n'est pas encourageante ; et pourtant la fécondation artificielle est, au point de vue de la physiologie, une conception très-rationnelle et, sous le rapport de la pratique, une opération facilement réalisable.

§ II. — Légitimité et moralité de l'opération.

La condition de la fécondation est la rencontre du produit mâle et du produit femelle. Les voluptés de la copulation sont les attraits dont se sert la nature pour rapprocher les deux sexes et opérer ainsi la fusion de leurs éléments respectifs de procréation. Cet attrait est si peu nécessaire à la fécondation en elle-même, que des femmes ont conçu non-seulement dans l'indifférence, mais encore dans l'aversion du coït, au milieu de douleurs physiques ou morales, pendant le sommeil, la léthargie, etc. Par conséquent on ne peut opposer à la fécondation artificielle l'absence du plaisir vénérien, parce que ce plaisir, charme exclusif du rapprochement sexuel, n'a de l'influence ni sur la marche des spermatozoïdes vers l'ovule, ni sur l'opération mystérieuse qui s'accomplit à leur contact.

De plus les contractions que le premier jet spermatique détermine sur le col de l'utérus pour rendre béante l'ouverture inférieure du canal cervical n'ont d'autre but, comme je l'ai dit plusieurs fois, que de faciliter, pendant le coït normal, l'entrée des spermatozoïdes dans la cavité utérine. Avec la fécondation artificielle, ces contractions deviennent inutiles, puisque les spermatozoïdes sont directement portés dans la cavité de l'utérus.

Aucune objection physiologique ne peut donc être faite contre la légitimité de la fécondation artificielle, et cette opération ne choque aucune idée scientifique.

En est-il de même pour la dignité de la profession et pour la morale ?

Je ne partage pas les craintes qui ont été exprimées à ces deux points de vue et j'en dirai, en quelques mots, les raisons.

Le médecin compromet son honneur et sa dignité quand il se fait le complice d'intentions coupables, comme dans les avortements ; quand il se prête à des désirs licencieux, comme le frottement clitoridien chez les femmes érotomanes ; quand il obéit aux caprices d'un malade ou lui rend des services de domesticité, sans que l'état de maladie légitime ou les uns ou les autres ; mais il ne déchoit ni dans son estime, ni dans celle du public, ni dans celle de ses confrères, quand il tente une opération inoffensive pour contrebalancer les conséquences d'une infirmité incurable, et dans le but d'assurer le repos d'une famille et de prévenir des catastrophes.

C'est tout à la fois augmenter les ressources de notre art et faire une œuvre essentiellement morale.

La méthode de Marion Sims est peut-être, j'en conviens, un peu *trop américaine* pour nos habitudes retenues et réservées ; heureusement cette manière de faire, quoique la plus rationnelle de toutes, n'est pas indispensable au succès de l'opération, et l'on peut l'abandonner, en se conformant aux minutieuses précautions que j'indiquerai tout à l'heure.

Après cette concession faite aux scrupules les plus exagérés, je ne vois plus dans la fécondation artificielle qu'une opération dont le procédé est scientifique, dont l'opportunité est incontestable si l'on ne dépasse pas les bornes de la nécessité, et dont le but est essentiellement moral, ainsi qu'il me reste à le dire.

La femme dominée par le mal de la maternité est capable de tout; fortune, position, honneur, rien ne lui coûte pourvu que sa passion soit satisfaite; le plus qu'elle fasse, c'est de dissimuler, le mieux qu'elle peut, le ou les adultères qu'elle commet à la poursuite d'une grossesse qu'elle ne trouve pas dans la couche conjugale, et de sauvegarder ainsi, non son honneur ou celui de son mari, mais celui de l'enfant qu'elle espère et qu'elle désire.

Quelquefois le sentiment de la maternité n'est pas le mobile déterminant; des considérations d'amour, de position, de fortune, etc., poussent souvent la femme aux partis les plus extrêmes, comme dans l'exemple suivant, que les journaux de l'époque rapportèrent, en m'attribuant un rôle de témoin que je n'ai jamais rempli.

Le fils de lord X... épousa, contre le gré de son père, une jeune Française splendidement belle et douée des qualités les plus aimables. Lord X..., irrité du mariage de son fils unique, fit un testament dont il ne cacha pas les clauses, par lequel il laissait son immense fortune à ses futurs petits-enfants et, à leur défaut, au bout de quinze ans, à des neveux et à des nièces. Le mariage fut stérile. La jeune femme, désespérée d'être ainsi la cause involontaire de la ruine de son mari, se soumit à toutes sortes de traitements et finit par venir me consulter.

Le col de l'utérus avait été amputé par un médecin allemand qui avait diagnostiqué le col conique de Lisfranc, et qui n'avait pas pris soin de maintenir béante l'ouverture inférieure du canal cervical. Celle-ci, quand je l'examinai, était réduite, par le tissu cicatriciel, en une petite fissure donnant avec peine passage au sang menstruel. La dilatation n'était plus possible, et le débridement n'eût pu communiquer aux tissus assez d'élasticité pour permettre l'introduction et le maintien des zoospermes.

La fécondation artificielle était ici indiquée et constituait le seul moyen qui pût réussir.

Malheureusement, cette opération n'avait point encore été proposée, et je n'osais la pratiquer, bien que la malade m'assurât être décidée à tout, même à prendre des amants *pour un quart d'heure*.

Je déclarai donc à madame X... que je ne pouvais rien pour elle, et lui conseillai de tenter un rapprochement avec son beau-père, plutôt que des médications qui seraient toujours sans résultats.

Prise de désespoir, madame X... partit pour Londres et parvint à s'entendre avec une sage-femme pour un accouchement simulé. Les témoins, le baby, les cris de la patiente, rien ne manquait à la comédie pour avoir toutes les apparences de la légalité, quand la police, avertie par les collatéraux, dont la vigilance était incessante, fit irruption dans la chambre mi-close et arrêta tous ces faux faiseurs d'enfants.

Je ne sais à quoi a été condamnée mon infortunée malade; mais j'affirme qu'en cette occurrence la fécondation artificielle eût été une œuvre essentiellement morale, et qu'elle eût peut-être prévenu le crime de supposition de part, que la loi française punit de la réclusion.

Pour les hommes, l'absence d'enfants n'est pas moins fâcheuse que pour les femmes : rien ne les attache au foyer domestique; les moins répréhensibles passent leur temps au cercle ou au café; beaucoup ont des maîtresses, et l'indifférence qu'ils éprouvent d'abord pour leur femme se change souvent en sentiments haineux qui rendent impossible la vie en commun. De là, des querelles, des procès, des scandales, et quelquefois la ruine, que la présence d'un enfant eût peut-être prévenus.

On peut assurer, sans crainte d'être démenti, qu'une opération chirurgicale se proposant un pareil résultat, n'offrant aucun danger et n'apportant, quand elle est faite dans les conditions voulues, aucune entrave à la parturition, est acceptée par les moralistes et les casuistes les plus scrupuleux.

Je n'insiste pas davantage sur des appréciations qui sortent de mon domaine, mais que j'ai dû exposer, pour la dignité de ce livre, et j'ai hâte de rentrer dans mon sujet : 1° en fixant les circonstances dans lesquelles la fécondation artificielle est légitime; 2° en décrivant les soins et les procédés qui me paraissent indispensables au succès de l'opération elle-même.

§ III. — Indications et contre-indications.

La fécondation artificielle n'est légitime et ne doit être employée par le médecin, soucieux de son honneur, que dans les cas où toute thérapeutique est impuissante et dans lesquels il ne reste que cette ressource pour arriver à la propagation.

Les infirmités qui s'opposent à la rencontre du produit mâle et du produit femelle ne sont pas l'apanage exclusif de la femme, comme on serait trop porté à le croire; elles peuvent tout aussi fréquemment se rencontrer chez l'homme, ainsi que je vais le dire.

Ces infirmités sont tantôt des vices de conformation auxquels l'art ne peut remédier, et tantôt des affections locales ou des conséquences d'affections que la médecine est incapable de faire disparaître.

Je vais indiquer les uns et les autres dans les deux sexes.

Chez l'homme : 1° *Vices de conformation.* — Ils portent sur la verge ou sur le canal vecteur du sperme, c'est-à-dire le canal de l'urèthre.

A. *Anomalies de la verge.* — La petitesse extrême de la verge, en ne pas écartant les parois vaginales et en laissant une trop grande distance entre l'ouverture du gland et celle du museau de tanche, est une cause de stérilité que l'art corrige quelquefois, comme dans l'exemple du jeune Brésilien que j'ai rapporté (1), mais qui, la plupart du temps, est au-dessus de nos ressources.

L'excès contraire, c'est-à-dire le volume exagéré de la verge, peut rendre impossible l'intromission, et, par suite, le déplissement du vagin et la mise en présence de l'organe mâle et de l'organe de la femme. Mais, il faut le reconnaître, il est excessivement rare, dans nos pays, du moins, de rencontrer des pénis dont le volume est un obstacle insurmontable au passage de la vulve. Je ne crois pas que, dans la pratique, un pareil motif puisse jamais être allégué.

L'absence de la verge, quoique très-rare, a été observée, ainsi que j'en ai rapporté des exemples (2), sans que les désirs vénériens et la sécrétion spermatique soient suspendus. Malgré ces témoignages inutiles de virilité, non-seulement la copulation, mais encore la génération sont impossibles; on comprend donc que la fécondation artificielle soit, dans un cas pareil, une ressource d'autant plus légitime qu'elle est la seule entre les mains de l'homme de l'art. — Il est bien entendu que je ne veux juger ni la moralité ni la légalité d'un mariage accompli avec un pareil vice de conformation.

Les courbures, les torsions de la verge, dont le redressement est si aléatoire, ainsi que nous l'apprend J.-L. Petit, sont des obstacles presque insurmontables à la copulation, et rentrent, par conséquent, dans le cadre de la fécondation artificielle.

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(1) Voyez les pages 93 et suiv.

(2) Voyez les pages 90 et suiv.

B. *Anomalies de l'urèthre.* — L'imperforation complète de l'urèthre avec canal de dérivation dans le rectum, la seule compatible avec la vie, légitimerait la fécondation artificielle, s'il était possible d'aller chercher le sperme au-dessus du sphincter anal. Dans un cas de cette espèce, Witehead pratiqua une ouverture et transforma l'infirmité en hypospadias. Ce changement, véritable bienfait pour le malade, ne remédiait pas à sa stérilité, mais rendait possible la fécondation artificielle, qui, nous allons le voir, est souvent la seule ressource des hypospades.

L'excès contraire à l'imperforation, c'est-à-dire la dilatation excessive de l'urèthre, s'accompagne toujours de courbure ou de déformation de la verge, qui souvent rendent le coït impossible. C'est par ce côté seulement que ce vice congénital peut légitimer la fécondation artificielle, car l'éjaculation spermatique n'est pas, d'ordinaire, sérieusement compromise.

Je ne m'arrête ni à l'étroitesse du méat, ni aux anomalies de cette ouverture, parce que la chirurgie triomphe facilement de ces malformations, et j'arrive à des infirmités réellement incurables et qui condamnent à la stérilité les malheureux qui en sont atteints.

Je veux parler de l'hypospadias et de l'épispadias.

La première de ces anomalies est infiniment plus fréquente que la seconde; mais celle-ci est plus sûrement une cause de stérilité que l'hypospadias.

En effet, l'hypospadias présente trois variétés, dont l'importance, à notre point de vue, n'est pas égale :

1° L'hypospadias balanique, dont l'ouverture se trouve à la fosse naviculaire;

2° L'hypospadias pénien, dont l'ouverture est située entre le gland et les bourses;

3° L'hypospadias scrotal, dans lequel je comprends la variété de l'hypospadias périnéal proposée par M. Buisson.

L'hypospadias balanique est celui qui, incontestablement, se rencontre le plus communément de tous; il n'est pas fatalement une cause de stérilité, car on cite des familles où cette anomalie se transmet de génération en génération. Cependant je connais, pour mon compte, plusieurs hypospadias balaniques constituant bien réellement une cause de stérilité.

L'hypospadias pénien peut encore permettre la fécondation, comme le prouvent quelques observations. Mais ces faits ne doivent être acceptés qu'à titre d'exception, et comme ne pouvant se produire que dans des circonstances elles-mêmes spéciales.

Enfin la troisième variété, c'est-à-dire l'hypospadias scrotal, est fatalement voué à la stérilité, car le sperme ne pénètre pas dans le vagin et souvent même n'arrive pas jusqu'à la vulve.

Certainement la fécondation artificielle a sa raison d'être dans les deux dernières variétés d'hypospadias, et son excuse dans beaucoup de cas de la première.

L'épispadias, infiniment plus rare que l'hypospadias, est, quelle que soit la position de l'ouverture uréthrale, une cause absolue d'infécondité. Comme la médecine opératoire est impuissante à remédier à ce vice de conformation, qui n'altère en rien la qualité du sperme, la fécondation artificielle est, dans ce cas, aussi autorisée que possible.

2° *États pathologiques.* — Ils se rencontrent ou sur l'appareil génital, ou en dehors de cet appareil.

A. — Le défaut d'érection et le défaut d'éjaculation, ces deux variétés d'impuissance, sont, dans certaines circonstances, des motifs légitimes de fécondation artificielle.

Le défaut d'érection, quoiqu'on doive toujours espérer le guérir, résiste quelquefois à toute thérapeutique, surtout lorsqu'il est lié à l'allanguissement de toutes les fonctions physiques et morales, ou à un commencement d'atrophie des organes génitaux.

Le défaut d'éjaculation n'est pas toujours constitué par l'état morbide que j'ai appelé *aspermatisme*. Il est également produit par tout ce qui met obstacle à la sortie saccadée et directe du sperme, comme un rétrécissement de l'urèthre, une courbure de la verge, etc. De ces accidents, les uns sont guérissables, les autres résistent à nos moyens d'action; mais presque tous s'opposent plus ou moins complétement à la copulation, et légitiment ainsi la fécondation artificielle.

B. — Les infirmités dont le siége est en dehors de l'appareil génital, et au secours desquelles l'art est sollicité d'intervenir pour la propagation, sont l'obésité extrême, les hernies énormes et les tumeurs du pli de l'aine.

J'énumère, sans m'y arrêter, tous ces obstacles, du côté de l'homme, aux rapprochements sexuels, parce que chacun, à sa place, a été longuement décrit dans le cours de cet ouvrage.

J'arrive aux obstacles *du côté de la femme.*

Ces obstacles peuvent siéger sur l'appareil copulateur ou sur l'appareil reproducteur proprement dit.

A. Pour l'appareil copulateur, il ne peut s'agir que d'un obstacle à l'intromission, puisqu'il est hors de doute que le plaisir vénérien n'est pas nécessaire à la fécondation et qu'il importe peu que la femme soit, ou non, atteinte de frigidité.

L'étroitesse de l'ouverture vulvaire et celle du canal vaginal, quelles soient congénitales ou acquises, rendent toujours impossibles les approches de l'homme et résistent souvent aux médications les plus rationnelles et les plus énergiques. Il semble qu'ici l'indication de la fécondation artificielle est formelle, car le doigt sur lequel on peut faire glisser la seringue, est tout à la fois plus intelligent, si l'on peut ainsi dire, et moins gros que la verge.

Pourtant il faut craindre que la parturition, résultat cherché de la fécondation artificielle, n'amène des désordres mortels et pour l'enfant et pour la mère, et que, par suite, le praticien n'ait à se reprocher d'être intervenu d'une manière non-seulement inutile mais encore nuisible.

Il importe donc, avant d'agir, de s'assurer exactement de la nature du rétrécissement, et des chances de dilatation qu'il présente. Il y a là des motifs de contre-indication de fécondation artificielle dont le médecin prudent et sage doit toujours tenir compte.

Le vaginisme n'est pas dans ce cas, car, au contraire, la parturition est une circonstance heureuse pour la guérison de cette affreuse maladie; mais, à moins de plonger la femme dans le sommeil chloroformique, je ne sais pas comment on parviendrait à introduire, non un spéculum, mais l'*indicateur* et un tube. Si la femme est anesthésiée, il est plus simple, plus moral et plus rationnel de la livrer à son mari, ainsi que l'on fait en Amérique (1), que de lui infliger une opération à laquelle sa conscience et sa volonté ne doivent jamais être étrangères, pas même l'espace d'un instant.

D'ailleurs le vaginisme est guérissable, et cette perspective est, pour le médecin honnête un motif d'abstention.

Les tumeurs de la vulve et du vagin, capables d'empêcher le congrès, sont rarement au-dessus des ressources de la médecine opératoire, même lorsqu'elles sont constituées par la présence d'un organe voisin, comme dans la cystocèle et la rectocèle vaginales.

Cependant malgré les progrès accomplis dans cette partie de la science, les anaplasties ne sont pas toujours réalisables et ne réussissent pas dans tous les cas. En ces circonstances, l'abstention est de toute rigueur, car si la tumeur empêche l'intromission de la verge, le passage de l'enfant est impossible, et la parturition peut être une cause de mort pour la mère et pour l'enfant.

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(1) Marion Sims, *Notes cliniques sur la chirurgie utérine*, p. 401 et 404.

B. Les affections des organes internes de la génération qui ne laissent au praticien que la ressource de la fécondation artificielle, sont rares ; elles ont toutes leur siége sur l'utérus et surtout sur son col.

Les affections des ovaires et celles des trompes ne peuvent entrer dans le cadre de l'opération dont il est actuellement question.

Dans les états pathologiques des ovaires, l'ovulation est ou conservée ou troublée ; dans l'un et l'autre cas la fécondation artificielle est inutile, car si l'ovulation est indemne, la faculté procréatrice est intacte ; si au contraire, l'ovaire est malade au point de rendre l'ovulation impossible, la fécondation, naturelle ou artificielle, est chimérique, puisque l'élément femelle fait défaut.

Du côté des trompes, les quelques affections que nous en connaissons sont des causes d'obstruction, et empêchent par conséquent le passage de l'ovule et du spermatozoïde.

Restent donc les affections de l'utérus et surtout de son col.

Les déplacements de l'organe, versions ou chute, ne sont jamais des empêchements absolus à la fécondation ; il est toujours possible de neutraliser les effets de ces causes réelles de stérilité, soit en conseillant une position convenable aux conjoints pendant le congrès, soit en redressant l'utérus, même momentanément, au moyen d'un tampon d'ouate, d'éponge préparée, etc., qui n'obstruent ni le vagin ni le museau de tanche ; j'estime donc qu'en ces circonstances on doit s'abstenir de la fécondation artificielle.

La même abstention est aussi commandée, mais pour un autre motif, dans les cas où le déplacement utérin est formé par des adhérences ou par des brides; en ces occurrences, une grossesse est un véritable danger pour la femme, et l'expose à des inflammations pelviennes ou péritonéales, déterminées par la déchirure ou le tiraillement des brides ou des adhérences; il y a donc ici une contre-indication formelle à l'emploi de la fécondation artificielle.

Il en est de même pour les flexions utérines s'accompagnant d'adhérences ou de brides.

Une semblable réserve n'est pas imposée à l'endroit des flexions dégagées de toute complication; mais on doit se demander : 1° si, comme les versions, les flexions ne sont pas réductibles, même momentanément; 2° si la courbure, formée par la flexion, n'est pas un empêchement absolu au passage du sperme.

Dans le premier cas il faut, comme je l'ai dit plus haut, réduire, même temporairement, la flexion et faciliter ainsi la fécondation naturelle.

Dans le second cas l'occlusion du col utérin est rarement assez prononcée pour empêcher le passage du sperme, car si l'obturation était complète, le sang menstruel, accumulé dans l'utérus, déterminerait des accidents qui forceraient le médecin à intervenir; par conséquent, au point de vue purement médical, les flexions ne constituent pas généralement une contre-indication à la fécondation artificielle, mais rentrent dans le cadre des considérations que j'ai exposées à l'occasion des déplacements de l'utérus.

Cependant toutes les flexions ne sont pas réductibles, même passagèrement, ou exigent l'emploi de moyens contenteurs qui peuvent ou gêner le coït ou le rendre impossible; en ces occurrences la fécondation artificielle est légitime; mais, je le répète, l'opportunité d'un semblable moyen n'est justifiable que par la nécessité la plus absolue.

Les flexions m'amènent naturellement à l'allongement hypertrophique du col qui, avant les travaux d'Huguier, était confondu avec elles.

Lorsque l'hypertrophie siége sur la partie sus-vaginale du col, il existe souvent une altération soit des trompes, soit des ovaires, auxquels cas la fécondation artificielle est complétement inutile, comme je l'ai dit plus haut ; il faut donc, avant de se décider à l'opération, s'assurer de l'intégrité de l'ovaire, car pour celle des trompes, nous en sommes réduits à de simples conjectures.

Quand l'hypertrophie occupe la portion vaginale du col, la résection ou le débridement peuvent restituer la fécondité à la femme, et par conséquent rendre inutile la fécondation artificielle.

Mais ici se dresse une question délicate qui se présente aussi dans beaucoup d'autres circonstances, et qui veut être résolue.

Si la femme, par un motif quelconque, se refuse à l'opération qui doit enlever la cause de sa stérilité, le médecin est-il autorisé à recourir à la fécondation artificielle? En thèse générale, l'abstention est ici de droit, parce que d'une part les opérations de complaisance nous sont généralement interdites, et que, d'un autre côté, la fécondation artificielle doit être la dernière ressource et comme la suprême espérance de ceux qui n'en ont plus.

Cependant il est des circonstances où la rigueur de la règle doit fléchir devant certaines considérations ; quelquefois, comme le dit M. le professeur Le Fort, une opération de complaisance est presque une opération de nécessité, « il n'y a pas ici de règles à poser, c'est dans chaque cas particulier une question de circonstance que le chirurgien doit juger dans sa conscience. »

Mais, je le répète, la règle est de ne pas obéir aux caprices des malades, et de s'abstenir de la fécondation artificielle tant qu'il reste une ressource à tenter.

Ces considérations s'adressent à tous les états, congénitaux ou acquis, qui mettent obstacle à la génération, et qui peuvent disparaître au moyen d'une opération : telles sont les empêchements à la copulation déjà signalés plus haut, et du côté du col utérin, sa conicité, son hypertrophie totale ou partielle, l'étroitesse de son ouverture vaginale, etc., etc.

Dans le tableau statistique des fécondations artificielles que, dans la seconde édition de ce livre, j'avais dressé par rapport aux causes de la stérilité, les écoulements divers de l'utérus et du vagin figurent pour deux fois; je ne puis admettre une aussi grande fréquence de ces motifs.

L'écoulement vaginal est doué d'une acidité contraire à l'existence des spermatozoïdes ; mais son abondance et son excès d'acidité sont les résultats d'affections qui ne sont pas au-dessus des ressources de notre art : les vaginites simples, contagieuses ou diathésiques sont guérissables, et au besoin même, l'excès d'acidité de leurs produits peut être neutralisé par des lavages, des injections ou des applications alcalines.

L'écoulement utérin est un motif de stérilité, moins à cause d'un excès d'alcalinité, que pour l'obstruction qu'il détermine dans le canal cervical; nous connaissons tous ces bourrelets glaireux, collants et qu'on arrache avec la plus grande peine; on comprend très-bien que de pareils écoulements soient un obstacle au passage du sperme; mais nous savons aussi que cet écoulement est toujours le produit d'une affection catarrhale, simple ou diathésique, de la muqueuse utérine, et que cette affection est guérissable, malgré les difficultés qu'on rencontre parfois; au besoin même, on peut, une heure avant le coït, nettoyer le canal cervical, et permettre ainsi le passage des spermatozoïdes.

En résumé et pour clore ce long chapitre des indications et des contre-indications de la fécondation artificielle, celle-ci ne doit être mise en usage que dans les vices de conformation et les états morbides, tant chez l'homme que chez la femme, qui déjouent toute thérapeutique, médicale et chirurgicale, et qui seuls empêchent la rencontre du produit mâle et du produit femelle.

Cependant si, par suite de l'étroitesse du bassin, par l'existence d'une tumeur ou par tout autre motif, la parturition ne pouvait avoir lieu sans compromettre la vie de l'enfant et celle de la mère, l'abstention est de rigueur, puisque l'opération serait tout à la fois inutile et nuisible.

L'abstention est-elle également commandée dans les cas où l'un des deux époux, sinon tous les deux, est atteint d'une diathèse maligne, telles que la tuberculose et le cancer? La question est grave; sans parler de la loi qui ne défend pas le mariage aux phthisiques et aux cancéreux, la naissance d'un enfant, quel qu'il soit, est souvent liée au maintien et au bonheur de la famille, et quelquefois à l'honneur et à la fortune des parents, comme dans l'exemple que j'ai cité plus haut; il n'y a pas de règle absolue à poser, et ici, comme en beaucoup d'occasions, le médecin ne doit prendre conseil que de sa conscience.

IV. — Méthodes et procédés opératoires.

La fécondation artificielle se fait par la méthode vaginale, ou par la méthode utérine.

A. *Méthode vaginale.* — Elle consiste à porter tout simplement le sperme dans le vagin, soit au moyen d'une injection, soit avec le secours d'un tampon de ouate.

L'observation de Hunter et celle de M. Lesueur se rapportent à cette méthode.

J'ai déjà fait remarquer qu'aucune garantie scientifique ne s'attachait à ces faits, et qu'il fallait les laisser dans l'ombre.

La méthode dont ils sont l'expression ne mérite pas davantage d'être conservée; elle est insuffisante dans beaucoup de cas, et trop aléatoire dans tous; elle blesse la pudeur de la femme sans compensation, et compromet l'honneur de la profession; à tous les points de vue elle doit être abandonnée.

B. *Méthode utérine.* — Par cette méthode on se propose de porter directement le sperme dans la cavité de l'utérus, ou tout au moins dans l'intérieur du canal cervical.

Pour atteindre ce but deux procédés ont été mis en usage: 1° l'insufflation, 2° l'injection.

1° *Procédé par insufflation.* — Il est dû au docteur Girault et n'exige qu'une sonde. « Je préfère dans la généralité des cas, dit ce médecin, introduire le sperme dans la sonde, placer celle-ci dans le col de l'utérus et souffler avec la bouche, attendu que s'il y a peu de sperme, il peut rester dans la seringue; tandis que par l'insufflation, il faut que tout pénètre dans la matrice (1). »

Ce procédé a des inconvénients de plus d'un genre; le plus saillant est la possibilité de l'introduction de l'air dans la cavité utérine, et par suite de coliques qui rendraient peut-être l'opération inutile.

Cependant, il ne faut pas, d'une manière absolue, abandonner ce procédé qui a réussi à son auteur et qui peut réussir encore dans d'autres circonstances.

2° *Procédés par injection.* — Il comporte cinq variétés: A, le procédé de M. Dehaut; B. le procédé de M. Gigon; C. le procédé de M. Marion Sims; D. le procédé de l'auteur; E. le procédé de M. le professeur Courty.

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(1) Girault, *Étude sur la génération artificielle dans l'espèce humaine*. Paris, in-12, p. 11.

A. *Procédé de M. Dehaut.* — Pour exécuter la fécondation artificielle, M. Dehaut propose un instrument qu'il nomme *injecteur* et qu'il décrit de la manière suivante : « L'injecteur est un tube en cristal épais, long de 20 centimètres environ, à cavité capillaire; il présente à son extrémité utérine un renflement cylindrique, formant une cavité capable de contenir 1 gramme environ de liquide, suivi d'une partie assez effilée pour pouvoir être introduite dans la cavité du col utérin ; cette partie effilée peut conserver la direction du tube, ou bien recevoir une inclinaison appropriée à la conformation ou à la direction de la partie de l'utérus avec laquelle elle doit entrer en rapport. L'extrémité manuelle de ce tube présente un évasement circulaire, en forme de cuvette, laquelle est fermée par une lame élastique en caoutchouc bien tendue, et constitue une chambre à air, communiquant avec la cavité par l'intermédiaire du conduit capillaire; la capacité de cette chambre à air ne doit pas dépasser celle du réservoir (1). »

Le mécanisme de cet instrument est facile à saisir : en appuyant sur la membrane en caoutchouc, on pousse l'air du réservoir dans le renflement cylindrique d'où le liquide qu'il contient est chassé et s'échappe par la canule. Malheureusement la canule est en verre et fait corps avec le tube, de telle façon qu'elle court risque de se briser, et qu'elle ne peut se prêter à toutes les positions qu'affecte l'utérus.

B. *Procédé de M. Gigon.* — Voici comment l'auteur le décrit lui-même : « Ayant introduit le doigt dans le vagin, je constatai que le col de l'utérus était long, effilé en forme de toupie, comme on dit; l'utérus était un peu rétroversé, et le museau de tanche était fort près du pubis ; alors, le long du doigt, je glissai une longue canule en caoutchouc, comme celles que l'on met au bout des seringues, et, après quelques difficultés, je réussis à en introduire le bout assez mince dans l'orifice du museau de tanche; pendant ce temps, le mari, dans un cabinet de toilette à côté, avait empli de sperme une seringue en verre de moyen calibre, et, après avoir replacé le piston, venait lui-même injecter la liqueur fécondante dans le pavillon de la canule qui sortait du vagin, car la matrice était basse; l'injection fut faite doucement, lentement et pénétra très-bien dans l'utérus (1). »

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(1) Dehaut, *De la fécondation artificielle dans l'espèce humaine, comme moyen de remédier à certaines causes de stérilité chez l'homme et chez la femme.* Paris, 1865, p. 26 et 27.

Ce procédé est l'enfance de l'art et ne peut réussir que par l'effet du hasard, comme dans l'observation de M. Gigon.

C. *Procédé de M. Marion Sims.* — L'instrument dont s'est servi le chirurgien américain, est de verre, et en tout semblable à la seringue de Pravaz, destinée aux injections hypodermiques. Il est ainsi facile de calculer la quantité de sperme que l'on injecte, puisqu'une révolution entière du piston correspond à une goutte, et une demi-révolution à une demi-goutte. C'est à cette dernière dose que s'est arrêté M. Sims; mieux que personne, le chirurgien américain fixe tous les points indispensables à la réussite de l'opération, et sur lesquels je reviendrai tout à l'heure.

Mais la partie la plus saillante du procédé de M. Marion Sims est la manière dont il recueille le sperme : il va le chercher directement dans le vagin, au moment même où cesse la copulation.

Sans aucun doute l'idée est essentiellement rationnelle et logique; mais je crains qu'elle ne soit difficilement acceptée, en France du moins, par l'homme aussi bien que par la femme. Je ne sais si je me trompe, mais il me semble que cette pratique blesse l'instinct et le sentiment de la pudeur dans l'un et l'autre sexe ; elle doit, dans l'intérêt de la fécondation artificielle, être reléguée parmi les excentricités dont l'Amérique nous donne souvent le spectacle, quoique, je le répète, elle soit l'expression de la vérité scientifique.

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(1) Gigon, *Réforme médicale*, 29 septembre 1867, n° 37.

D. *Procédé du docteur Roubaud.* — Au premier abord, sans penser aux scrupules que je viens d'exprimer, et ne m'arrêtant qu'à l'idée rationnelle, je le répète, de M. Marion Sims, je voulus simplifier encore le manuel opératoire du chirurgien américain, et, dans ce but, je fis construire, par M. Mathieu, une pompe aspirante et foulante dont le dessin, pour la reproduction duquel je demande à faire une exception, fera mieux comprendre qu'une description, la portée et le mécanisme (1).

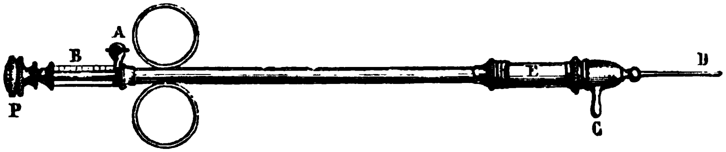

FIG. 1. — Seringue de Roubaud pour la fécondation artificielle. — E. Corps de pompe aspirante et foulante où les soupapes sont remplacées par une sorte de robinet taillé dans le piston lui-même. — C. Canule d'aspiration que l'on allonge à volonté avec un ajutage en caoutchouc. — D. Canule que l'on introduit dans l'utérus. — P. Piston. En tirant sur sa tige le liquide dans lequel plonge la canule C est aspiré, et le bouton A indique sur la partie graduée B le nombre de gouttes qui ont été amenées dans le corps de pompe. En faisant alors décrire au bouton A une demi-révolution à droite, le piston tourne lui-même, et, en déplaçant une échancrure dont il est armé, il ferme la canule d'aspiration et ouvre celle qui termine la seringue. — On n'a plus alors qu'à pousser la tige du piston pour que l'injection soit accomplie.

Le même petit instrument peut également servir dans les cas où le sperme est recueilli en dehors de la poche vaginale ; ou on le charge comme une seringue, en aspirant le liquide par la canule C, ou en adaptant à la même canule d'aspiration un ajutage en caoutchouc que l'on plonge dans la liqueur spermatique, après avoir introduit la canule D dans le col de l'utérus; dans l'un et l'autre cas, on opère ensuite comme il est dit dans la légende.

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(1) Présenté à l'Académie de médecine, le 12 avril 1872, et reproduit dans le *Nouveau Dictionnaire de médecine et de chirurgie pratiques*, t. XV, p. 777, art. GÉNÉRATION.

Mais comme tous les praticiens n'ont point cet appareil qui, cependant, simplifie singulièrement l'opération, il me reste à faire connaître le procédé de M. le professeur Courty, afin de ne rien laisser dans l'ombre, et aussi afin que le chirurgien se décide en pleine connaissance de cause.

E. *Procédé de M. le professeur Courty.* — « On revêtira, dit-il, le membre viril d'un condom, en ayant soin de ne pas en appliquer complétement le cæcum sur le gland; le coït étant terminé, le produit de l'éjaculation restera dans ce cæcum; par un coup de ciseau donné à la baudruche, on l'en fera sortir et on le recueillera dans une petite seringue de verre préalablement chauffée (en la tenant plongée pendant quelques minutes dans de l'eau à 40°), et munie d'une sonde utérine métallique ou élastique, à l'aide de laquelle il sera facile de le faire pénétrer dans la cavité utérine avec les plus grands ménagements; on prescrira à la femme le repos complet pendant une journée (1). »

Ce procédé, sous le rapport de l'obtemption du sperme, se rapproche de celui de M. Marion Sims; il en a l'inconvénient sans en avoir les avantages : en opérant immédiatement après le coït, le chirurgien américain se proposait de soustraire les zoospermes au contact de la lumière et à un changement de température, ce qui était logique, si c'était peu décent; M. Courty, sans être beaucoup plus soucieux de la pudeur de la femme, reçoit le sperme dans un condom transparent et dont la température ne peut être conservée d'une manière uniforme; il perd ainsi les bénéfices qui seuls peuvent faire excuser l'intervention médicale immédiatement après le rapprochement sexuel.

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(1) Courty, *Traité pratique des maladies de l'utérus, des ovaires et des trompes*, 2ᵉ édit. Paris, 1870, p. 1165.

Heureusement l'expérience a prouvé qu'il n'était pas nécessaire de soumettre à une pareille épreuve la pudeur de la femme, et que la fécondation artificielle pouvait réussir dans des conditions acceptables par la morale et par la science.

Ce sont ces conditions qu'il me reste maintenant à faire connaître et par lesquelles je terminerai ce long article.

§ V. — Manuel opératoire.

Avant d'entreprendre la fécondation artificielle, le médecin, pour ne pas s'exposer à jouer un rôle de dupe, doit s'assurer que le sperme qui sera fourni contient des animalcules en suffisante quantité et dans les conditions normales de vitalité.

Cet examen peut se faire quelques jours avant l'opération.

Celle-ci étant résolue, on fixe le moyen par lequel on se procurera le sperme.

Sera-ce par le coït ? Sera-ce par la masturbation ?

Nous repoussons le premier moyen comme contraire à la dignité et à la pudeur de la femme, aussi bien par le procédé de M. Marion Sims, que par celui, moins brutal il est vrai, de M. le professeur Courty.

De deux maux nous choisissons le moindre, et nous donnons la préférence à la masturbation que l'homme se pratique lui-même, en dehors de tout regard, dans un cabinet voisin.

Le sperme doit être reçu dans un petit flacon à couleur brune, bouché à l'émeri, et maintenu constamment, avec le secours d'un bain-marie, à une température de 40° centig.

Ces précautions mettent les spermatozoïdes à l'abri de la lumière, de l'air et des changements de température.

Que, pour l'injection, le chirurgien se serve de la seringue à compteur de M. Marion Sims, ou de la seringue en verre de M. Courty, ou de ma pompe aspirante et foulante, il faut que l'instrument soit plongé dans l'eau chaude, et maintenu, pendant quelque temps, à une température de 45 à 50°, pour qu'au moment où le sperme y sera versé les animalcules y retrouvent les 40° qu'ils avaient au bain-marie.

Quel que soit l'instrument dont on fasse usage, on le charge de deux à trois gouttes de sperme au plus, et on le maintient dans l'eau chaude jusqu'à ce que tout soit prêt pour l'injection.

La femme est au bord du lit, les jambes écartées et appuyées sur deux chaises, comme pour l'examen au spéculum ; seulement il faut avoir soin de soutenir avec des oreillers le dos et la tête, parce que, l'opération terminée, la patiente doit garder la même position de vingt minutes à une demi-heure.

Avec un peu d'habitude on peut se passer de spéculum, en faisant glisser la canule le long de l'indicateur gauche introduit dans le vagin, et reposant sur l'ouverture du museau de tanche.

Cependant il est préférable de se servir du spéculum que la femme elle-même maintient en place, ce qui laisse à l'opérateur ses deux mains libres.

Comme le recommande M. Marion Sims, la canule ne doit pas pénétrer dans le col au delà de 0,03 cent.

Quant tout est ainsi préparé, on pousse doucement et sans secousse la liqueur séminale dans la proportion d'une demi-goutte à une goutte.

Après l'injection, la canule doit rester en place de trois à cinq minutes ; si on voyait du sperme sortir du col de l'utérus, il faudrait enfoncer la canule de 0,01 cent. de plus, et recommencer l'injection.

Lorsque cet accident ne s'est pas produit au bout de cinq minutes, on retire doucement la seringue et, pendant quelques instants encore, on laisse le spéculum, pour s'assurer que la sortie du sperme n'a pas lieu après le retrait de la canule.

Au bout de dix minutes, toute appréhension est passée; on peut retirer le spéculum.

Comme je l'ai dit plus haut, on laisse la femme dans la même position pendant une demi-heure environ, au bout de laquelle on la fait coucher pendant trois ou quatre heures au moins.

Si le canal cervical est obstrué par des mucosités épaisses, par un bourrelet albumineux se prolongeant jusqu'à l'ouverture interne du col, il faut rendre libre le passage et, au besoin même, faire une injection intra-utérine très-légèrement acide, pour neutraliser l'excès d'alcalinité que pourraient avoir ces mucosités.

Quelques gouttes de vinaigre dans un peu d'eau répondent à cette indication.

Si le papier de tournesol n'en démontre pas l'impérieuse nécessité, il vaut mieux s'abstenir, parce que les spermatozoïdes meurent promptement dans un milieu acide.

L'excès d'alcalinité des mucosités utérines capables de tuer les spermatozoaires est assez rare, tandis que l'acidité des mucosités vaginales, incompatible avec la vitalité des spermatozoïdes, est assez commune; aussi, quoiqu'il soit difficile d'admettre que ces mucosités puissent pénétrer dans le col de l'utérus, il est bon, comme excès de précaution, de faire faire, une demi-heure au plus avant la fécondation artificielle, une injection vaginale alcaline, préparée avec quelques grammes de bicarbonate de soude pour un verre d'eau.

Afin de se mettre dans les conditions les plus favorables à la réussite, il faut opérer dans les huit jours qui suivent la cessation des menstrues. Cette règle n'est pas absolue : dans les cas d'insuccès à cet époque, on doit pratiquer l'opération soit dans les trois jours qui précèdent la menstruation, soit même pendant l'écoulement cataménial.

Il va sans dire qu'à chaque opération le mari doit fournir un sperme nouveau.

Au besoin même et pour ne pas mettre à une trop longue épreuve la patience de la malade, on peut faire une première injection avant les règles, et, si celles-ci apparaissent, la recommencer, soit vers la fin de leurs cours, soit immédiatement après leur cessation.

Si, après cinq ou six injections spermatiques faites aux diverses époques que je viens d'indiquer, c'est-à-dire si au bout de cinq à six mois on n'a obtenu aucun résultat, il est inutile, de poursuivre de nouvelles tentatives; on est alors *en droit de* supposer qu'avec le motif qui légitimait la fécondation artificielle, il existe concurremment, dans l'appareil génital de la femme, une de ces altérations, comme l'obstruction et l'*inertie* des trompes, etc., qui échappent à nos moyens d'investigation et qui ne se décèlent par aucun phénomène pathologique.

FIN

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LE Dr DAVID RICHARD

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En essayant d'écrire l'*Histoire de la génération chez l'homme et chez la femme* nous avons voulu remplir un double but :

1° Donner l'explication d'une série de phénomènes qui constituent les fonctions de la génération et qui, pour être plus compliqués et plus délicats que ceux qui constituent les fonctions de la digestion, de la circulation, de la nutrition, etc., n'en sont ni moins intéressants, ni moins importants ;

2° Présenter au point de vue pratique une série d'enseignements sans lesquels ne saurait se constituer l'hygiène la plus élémentaire, celle que chacun doit connaître le plus particulièrement pour son propre usage, puisqu'elle s'adresse aux fonctions les plus intimes et les plus secrètes.

C'est à ce double besoin que nous avons essayé de satisfaire par le présent ouvrage.

Ce n'est pas à dire que la génération et ses *mystères* n'aient été déjà l'objet de publications à l'adresse du public autre que les médecins et les hommes de science : ces publications sont nombreuses, trop nombreuses même; mais souvent elles ont dépassé le but sans l'atteindre ; l'une considérait la question au point de vue purement anecdotique et, si nous pouvons ainsi nous exprimer, au point de vue amusant ; d'autres ont surtout cherché à donner au lecteur une série de recettes plus ou moins spéciales et à peindre les tristes résultats de certains excès, pour en indiquer aussitôt le palliatif ou le remède qu'ils avaient charge de recommander.

ENVOI FRANCO CONTRE UN MANDAT SUR LA POSTE

Notre but est plus simple, plus désintéressé, et, nous croyons pouvoir le dire, d'une utilité plus générale. Le résumer en quelques lignes, ce sera indiquer en même temps d'une manière sommaire le contenu des pages qui vont suivre.

La science a fait dans ces dernières années des conquêtes positives dans le domaine de l'étude de la génération : *ovulation* et *menstruation*, *érection* et *mécanisme nerveux*, *fécondation* et *vie de l'embryon*, tels sont quelques-uns des termes qui marquent les principales étapes dans la voie du progrès scientifique.

Ce sont ces progrès que nous voulons faire connaître en mettant leur étude à la portée de tous.

Chaque fait scientifique a son application à l'*hygiène* : c'est l'hygiène de la génération que nous voulons étudier, hygiène qui présente des considérations spéciales pour l'enfance, la puberté, l'âge mûr et la vieillesse : hygiène qui, appliquée à la femme grosse, appliquée à la fécondation et à l'acte fécondateur, s'adresse déjà à l'enfant avant qu'il ait vu le jour, avant même qu'il ait été conçu.

Les *applications médico-légales* ne sont pas moins nombreuses : par les questions qu'elles comportent, elles touchent aux intérêts les plus délicats de la famille et de la société.

Nous nous attacherons donc à bien poser les bases scientifiques de ces questions.

Enfin, la *morale* elle-même ne peut rester étrangère aux faits que la science a consacrés. Loin d'en être ébranlée, elle y trouve à chaque pas de nouveaux appuis. La nature, en nous révélant ses voies et ses moyens, nous fixe d'une façon exacte les limites précises du devoir, et la médecine nous montre que jamais l'homme ne s'écarte impunément des bornes naturelles imposées par la puissance de ses organes et de ses fonctions.

Au lieu d'abandonner les lois sacrées du mariage aux lazzis des comédies et des chansons, au lieu de laisser le lien conjugal se relâcher par l'ignorance et le ridicule des rapports des conjoints et se briser fatalement faute de notions positives et harmoniques, la physiologie, la science pure, guidera l'époux et rendra certaine et durable sa combinaison avec l'épouse de son choix ; elle lui montrera que de lui seul dépendent le bonheur et la paix du ménage par l'accomplissement normal et complet de la fonction binaire, toujours suivie d'un calme parfait et des dispositions les plus heureuses à la gaieté et à l'expansion du cœur ; elle lui dira que son bonheur est plus dans le bonheur de sa moitié qu'en lui-même ; que sa première et sa principale étude est de chercher et de trouver la voie du cœur de sa compagne chaste et pure, qui attend de lui seul l'émotion de ses sens.

Tel est le but que nous nous sommes proposé : puissions-nous ne pas être resté trop au-dessous de la tâche que nous avions entreprise.

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